



**GROUNDTECH**  
CONSULTING

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Clayton

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| PROJECT                                 | EVONIK CHEMICAL WORKS, CLAYTON                                                       |
| REPORT NAME                             | ENVIRONMENTAL APPRAISAL                                                              |
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## SUMMARY

| Site Details                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                         |
|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|
| Site Location                     | The site is located circa 2.5 miles east of Manchester City Centre, as shown on the Project Location Plan GRO-20221-P01 and is approximately centred on National Grid Reference 387976, 398343                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                         |
| Site Area                         | The site is roughly rectangular in shape and is approximately 0.41 hectares in area. The topography of the site is generally level. The development area forms the western part of the Evonik Chemical Works and comprises a number of old brick structures. This area of the site has more recently been used as offices and storage buildings, no chemical processing works have taken place in this area for a long period of time. A boiler house and an electricity substation are indicated in the north western part of the development area.. Surrounding the buildings are areas of concrete hardsurfacing. No vegetation is present on the proposed development area.                                                                                             |                                                         |
| Site Setting                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                         |
| Geology/Hydrogeology              | <p>Geological maps did not indicate the presence of any Made Ground beneath the site, Made Ground was anticipated to be present across the site due to past use from foundations and hardsurfacing.</p> <p>The superficial deposits underlying the site are indicated to be Glacial Till, this stratum characteristically comprises gravel, sand, silt, and clay and is classified as a Secondary Undifferentiated Aquifer.</p> <p>The site is indicated to be underlain by the Manchester Marls and is classified as a Secondary B Aquifer.</p>                                                                                                                                                                                                                            |                                                         |
| Environmental Setting             | The nearest named watercourse is the Ashton Canal 10m south from the site location.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                         |
| Pollution Linkage (PL) Assessment | Controlled Waters                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | The risk to controlled waters was considered to be Low. |
| Ground Model                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                         |
| Made Ground Soils                 | <p>Made Ground was encountered beneath the site to a maximum depth of 1.0m bgl. Two main Made Ground populations were encountered beneath the concrete slab during the investigation and are described below:</p> <ul style="list-style-type: none"><li>Black slightly sandy silty clay was encountered in BH01 between 0.19m and 1.0m bgl.</li><li>Brown sandy subangular to subrounded fine to coarse gravel of mixed lithologies including brick was encountered in BH02 and BH03 between 0.16m and 0.5m, and 0.23m and 0.5m bgl respectively.</li></ul>                                                                                                                                                                                                                 |                                                         |
| Natural Soils                     | <p>The natural strata encountered generally confirmed the published geological records. Three main natural stratifications encountered during the investigation and are described below:</p> <ul style="list-style-type: none"><li>Soft to stiff brown grey variably silty variably sandy Clay was encountered in BH01, BH02 and BH03 from a minimum depth of 0.5m to a maximum depth of 13.0m bgl.</li><li>Brown slightly clayey occasionally silty fine Sand was encountered in BH01 and BH02 from a minimum depth of 6.0m to 14.0m bgl.</li><li>Firm brown silty Clay was encountered in BH02 and BH03 from a minimum depth of 13.0m to a maximum depth of 20.5m bgl.</li></ul> <p>Brown slightly sandy Silt was only encountered in BH01 between 9.0m to 13.0m bgl.</p> |                                                         |

|                                                                                          |                                                                                                                                                                                                                                                                            |
|------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Bedrock</b>                                                                           | <p><i>Red Mudstone was encountered in BH01, BH02 and BH03 at a minimum depth of 20.0m to a maximum of 48.5m bgl.</i></p> <p><i>Red Sandstone was encountered in BH01 and BH03 at a minimum depth of 43.0m to a maximum of 50.0m bgl.</i></p>                               |
| <b>Groundwater</b>                                                                       | <p><i>Groundwater strikes were encountered in BH01, BH02 and BH03 between 23.0m to 36.0m bgl and was encountered within the bedrock strata.</i></p>                                                                                                                        |
| <b>GQRA and Revised (PL) Assessment</b>                                                  |                                                                                                                                                                                                                                                                            |
| <b>Controlled Waters</b>                                                                 | <p><i>Initial groundwater monitoring results have indicated that groundwater protection measures are not considered necessary at this stage and the risk to controlled waters is considered to be Low. This will be confirmed on completion of the gas monitoring.</i></p> |
| <b>Final Appraisal</b>                                                                   |                                                                                                                                                                                                                                                                            |
| <p><i>No further work is required with respect to the risk to controlled waters.</i></p> |                                                                                                                                                                                                                                                                            |

## TABLE OF CONTENTS

|            |                                                          |           |
|------------|----------------------------------------------------------|-----------|
| <b>1.0</b> | <b>INTRODUCTION.....</b>                                 | <b>1</b>  |
| 1.1        | PROJECT OBJECTIVES .....                                 | 1         |
| 1.2        | DEVELOPMENT .....                                        | 1         |
| 1.3        | LIMITATIONS .....                                        | 2         |
| <b>2.0</b> | <b>SITE SETTING.....</b>                                 | <b>3</b>  |
| 2.1        | LOCATION.....                                            | 3         |
| 2.2        | SITE DESCRIPTION .....                                   | 3         |
| <b>3.0</b> | <b>PRA SUMMARY.....</b>                                  | <b>5</b>  |
| 3.1        | INTRODUCTION .....                                       | 5         |
| 3.2        | SITE HISTORY AND CONSULTATIONS .....                     | 5         |
| 3.3        | GEOLOGY AND HYDROGEOLOGY .....                           | 5         |
| 3.4        | PRELIMINARY CONCEPTUAL SITE MODEL.....                   | 6         |
| 3.5        | GROUND ENGINEERING.....                                  | 7         |
| 3.6        | ADDITIONAL CONSIDERATIONS.....                           | 7         |
| <b>4.0</b> | <b>SCOPE OF INVESTIGATION AND RATIONALE .....</b>        | <b>8</b>  |
| 4.1        | PROJECT OBJECTIVES .....                                 | 8         |
| 4.2        | SCOPE OF WORKS .....                                     | 8         |
| 4.3        | SOIL SAMPLING .....                                      | 8         |
| 4.4        | GEO-ENVIRONMENTAL TESTING.....                           | 9         |
| 4.5        | GROUNDWATER MONITORING/SAMPLING .....                    | 9         |
| <b>5.0</b> | <b>GROUND MODEL.....</b>                                 | <b>11</b> |
| 5.1        | MADE GROUND.....                                         | 11        |
| 5.2        | NATURAL GROUND.....                                      | 11        |
| 5.3        | BEDROCK.....                                             | 12        |
| 5.4        | GROUNDWATER.....                                         | 12        |
| 5.5        | WATCHING BRIEF.....                                      | 12        |
| 5.6        | EXCAVATION/BOREHOLE STABILITY .....                      | 12        |
| 5.7        | EXCAVATION/BOREHOLE PROGRESS.....                        | 12        |
| <b>6.0</b> | <b>CONTROLLED WATERS ASSESSMENT.....</b>                 | <b>13</b> |
| 6.1        | GEO-ENVIRONMENTAL TESTING RESULTS - SOILS .....          | 13        |
| 6.2        | DISCUSSION - SOILS .....                                 | 14        |
| 6.3        | GEO-ENVIRONMENTAL TESTING RESULTS - GROUNDWATER .....    | 15        |
| 6.4        | GENERIC QUANTITATIVE RISK ASSESSMENT - GROUNDWATER ..... | 18        |
| 6.5        | REVISED POLLUTION LINKAGE ASSESSMENT .....               | 18        |
| 6.6        | OUTLINE REMEDIAL STRATEGY .....                          | 21        |
| <b>7.0</b> | <b>FINAL APPRAISAL.....</b>                              | <b>22</b> |
| 7.1        | LAND QUALITY .....                                       | 22        |
| 7.2        | REQUIRED FURTHER WORK.....                               | 22        |
| <b>8.0</b> | <b>RELEVANT INDUSTRY REFERENCES.....</b>                 | <b>23</b> |

APPENDIX 1 - PLANS

APPENDIX 2 - SITE PHOTOGRAPHS

APPENDIX 3 - EXPLORATORY HOLE LOGS

APPENDIX 4 - GEO-ENVIRONMENTAL TESTING RESULTS (SOILS)

APPENDIX 5 - GEO-ENVIRONMENTAL TESTING RESULTS (GROUNDWATER)

APPENDIX 6 - MONITORING DATA

APPENDIX 7 - CIRIA RISK ASSESSMENT METHODOLOGY

APPENDIX 8 - CONTAMINATED LAND LEGISLATIVE BACKGROUND

| Plans                 |                 |                                |
|-----------------------|-----------------|--------------------------------|
| <i>Plan Reference</i> | <i>Revision</i> | <i>Title</i>                   |
| GRO-20221-P01         | -               | Project Location Plan          |
| GRO-20221-P04         | -               | Exploratory Hole Location Plan |
| GRO-20221-P10         | -               | Controlled Waters CSM          |

## 1.0 INTRODUCTION

### 1.1 Project Objectives

Groundtech Consulting Limited have been instructed by Kennedy Redford on behalf of Evonik Chemicals Limited to undertake an Environmental Appraisal for a site at Evonik Chemical Works, Clayton.

To address the requirements of Planning Condition 8, the Environment Agency advised the applicant/agent seeks to produced new/revised reporting which accords with our LCRM guidance. Achievement of accordance with our LCRM guidance will very likely require the undertaking of intrusive works to characterise the conditions of the site's soil and groundwater. Collection of appropriate data will enable an appropriate risk-based assessment to be undertaken and , in turn, determination as to whether any remedial works are required as part of the development.

An investigation was undertaken in accordance with BS 5930:2015, LCRM and BS 10175:2017, to revise the CSM and quantify the level of risk identified in the PRA. The Appraisal has been prepared in accordance with current UK Legislation and to discharge Land Quality pre-commencement planning conditions.

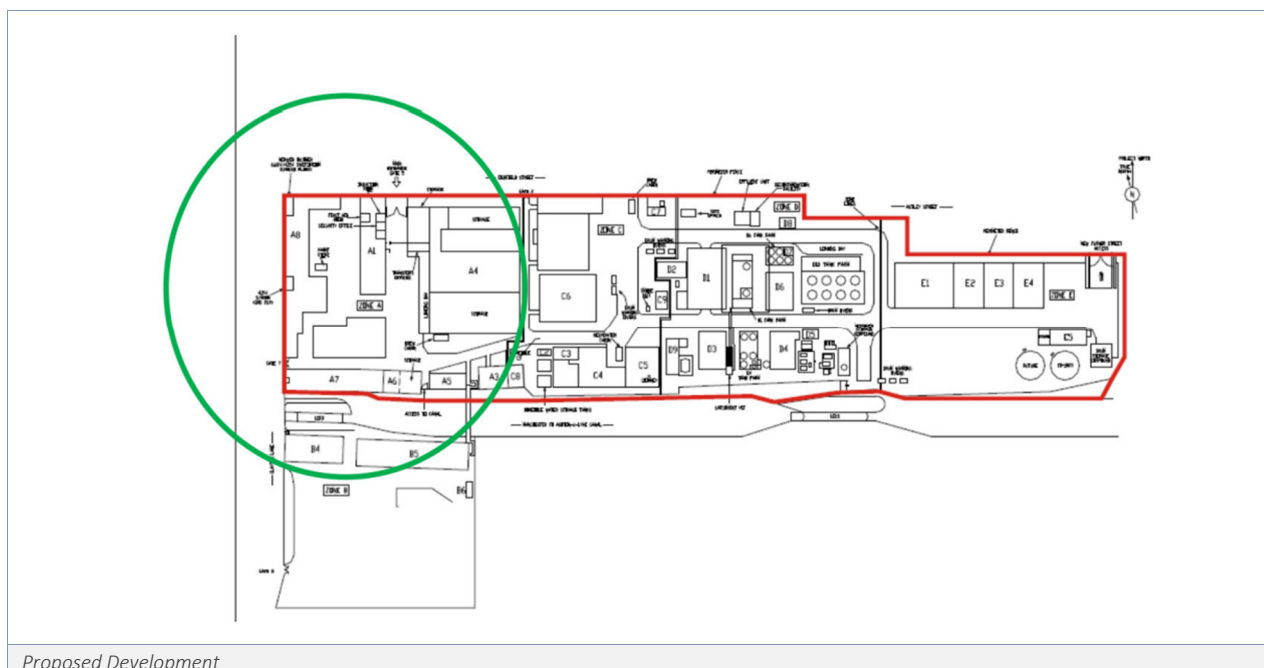
The following reports have previously been prepared for the site by Groundtech Consulting and should be read in conjunction with this appraisal:

- *Preliminary Environmental Risk Assessment referenced GRO-20221-2122\_1.2, dated 04 May 2021.*

Both reports have been undertaken in accordance with current LCRM risk assessment guidance.

### 1.2 Development

The proposal was to partially demolish and refurbish some Victorian brick buildings in the western part of the larger site (Zone A). The final development area is entirely covered over with concrete hardsurfacing with a temporary structure placed on the surface.





### 1.3 Limitations

Other conditions may exist on the site that have not been taken into account in this assessment as they are outside the scope of works. Groundtech Consulting are not responsible for these circumstances that are not outlined in the report.

The assessment has been prepared for the exclusive use of the client. No third parties may rely on or reproduce the contents of the report without the written permission of Groundtech Consulting Limited. If any unauthorised third party comes into possession of the report they rely on it at their own risk and Groundtech Consulting Limited will not be obliged to provide a duty of care.

## 2.0 SITE SETTING

### 2.1 Location

The site is located circa 2.5 miles east of Manchester City Centre, as shown on the Project Location Plan GRO-20221-P01 and is approximately centred on National Grid Reference 387976, 398343



Project Location

Access to the site is gained off Oldfield Street to the north of the site.

### 2.2 Site Description

The site is roughly rectangular in shape and is approximately 0.41 hectares in area. The topography of the site is generally level.

#### *Site Features*

The development area forms the western part of the Evonik Chemical Works and comprises a number of old brick structures.

This area of the site has more recently been used as offices and storage buildings, no chemical processing works have taken place in this area for a significant period of time. A boiler house and an electricity substation are indicated in the north western part of the development area.

A number of the buildings in the area have been demolished, leaving areas of concrete hardsurfacing.

No vegetation is present on the proposed development area.

#### *Site Boundaries and Surrounding Land Uses*

The development area is bound around the entire perimeter by security fencing or the external walls of existing buildings on site.



The site is surrounded by the following land uses/features:

- North - *Public open space followed by residential land use*
- East - *Evonik Chemical Works which includes several decommissioned tanks*
- West - *Ashton Canal*
- South - *Commercial land use*

Site photographs are presented in *Appendix 2*.

### 3.0 PRA SUMMARY

#### 3.1 Introduction

A Preliminary Risk Assessment (*GRO-20221-2112\_1.2*) dated 04 May 2021 was previously produced by Groundtech Consulting and the findings are summarised in the following sections.

#### 3.2 Site History and Consultations

##### *Site History*

Earliest historical records from 1893 show the site being occupied by Clayton Chemical Works with the surrounding areas indicating associated chemical works buildings, Ashton canal along with other industrial industries.

In 1908 the site is depicted as a Finishing Works, and the surrounding industrial areas have been developed, whilst terraced housing has been built to the north.

Maps from 1932 show a new chimney in the south east of the site, and more developments in the surrounding areas including a rail network, Rose Bank Casing Works, and unidentified tanks.

No change occurs on site until 1992 where an electrical substation can be identified in the north west of the site.

Between 1932 and 1992, further expansion of the chemical works can be identified in the immediate vicinity of the site, whilst industrial expansion of Victoria Works and a gas works can be identified.

In 2010, the chemical works to the south and south west of the site were demolished. The recent maps show buildings to the east, south and west of the site.

##### *Consultations*

The following environmental information was identified:

- *The site is not within an area requiring radon protective measures.*
- *There are five authorised processes on site associated with the organic chemicals, nitrogen containing compounds, e.g. amines.*
- *The nearest pollution incident was 41m north west relating to contamination of organic chemicals/products. Minor impact was caused to air, no impact was caused to land and water.*
- *A Historical landfill 310m east was identified, where inert waste and liquid sludge was accepted.*
- *A Waste paper works 220m north west was identified.*
- *There is an electrical substation on the site.*
- *Tanks have been identified 60m east*
- *A vehicle repair garages is located 65m west.*

#### 3.3 Geology and Hydrogeology

Geological maps did not indicate the presence of any Made Ground beneath the site, however it was anticipated to be present across the site due to past uses of the site.

The superficial deposits underlying the site are indicated to be Glacial Till which characteristically comprises of a mixture of clay, silt, sand, and gravel and is classified as a Secondary Undifferentiated Aquifer.

The site is indicated to be underlain by the Manchester Marls comprising mudstone and is classified as a Secondary B Aquifer.

The site is not indicated to lie within 500m of a Source Protection Zone.

#### Hydrology

The nearest named watercourse is the Ashton Canal 10m south of the site. There are no other surface water features located within the 250m of the site.

### 3.4 Preliminary Conceptual Site Model

The following risks were identified by Groundtech Consulting Ltd:

| Receptor                                  | Risk            | Discussion                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------------------------------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Site End Users from Contaminated Soils    | Low             | <p>General Made Ground is anticipated beneath the site. The site use as a chemical factory maybe be a potential source of contamination of rubber additive compounds, petroleum blending, 'I' resin and pepton mixing.</p> <p>Based on former uses of the chemical works, there may be potential contamination including phenols, formaldehyde, amines, organic acids, residual epoxy resins, inorganic acids, petroleum hydrocarbons, rubber chemicals, white vulcanised vegetable oil.</p> <p>The site is indicated to be underlain by a significant thickness of Glacial Till deposits which are predominately impermeable, therefore this will have restricted the lateral migration of potential offsite mobile contamination affecting site end users from contamination.</p> <p>The site end use will be entirely covered in hardsurfacing, this will break the pathway to potentially contaminated soils.</p> |
| Site End Users from Inhalation of Vapours | Low             | <p>Potential sources of volatile contamination have been identified onsite from the historic chemical works, however chemical processes have not been undertaken on site since the 1890s. Yet the area directly adjacent to the site is still a functioning chemical works.</p> <p>The entire site will be covered in hardsurfacing being used as an external area and no receptor is present.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Potable Water Supply Pipe                 | Moderate to Low | <p>Made Ground is likely to be present at installation depth which may be contaminated with a range of contaminants including VOCs, SVOCs and hydrocarbons. No new potable waterpipes are proposed.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Site End Users from Inhalation of Gas     | Moderate        | <p>Made Ground is anticipated below the site. In addition, potential offsite sources of permanent ground gases include a graveyard, sand pit, and refuse heap.</p> <p>However. the site will be entirely covered in hardsurfacing and is an external area.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Controlled Waters                         | Low             | <p>Gross mobile contamination not anticipated and there is significant thickness of impermeable superficial acting as an aquitard.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |



### **3.5 Ground Engineering**

No new foundations were incorporated as part of the new development as the temporary building was constructed at the site.

### **3.6 Additional Considerations**

The site is likely to be underlain by Made Ground and natural Glacial Till deposits.

The use of a SuDS drainage solution at the site is unlikely to be viable option.

The site is not indicated to be affected by a legacy of historic coal mine workings and is not located within a Development High Risk Area.

## 4.0 SCOPE OF INVESTIGATION AND RATIONALE

### 4.1 Project Objectives

The aim of the fieldwork was to:

*Determine the stratification beneath the site.*  
*Maintain watching brief for visual and olfactory evidence of contamination.*  
*Obtain samples using methodology in current guidance for contamination analysis.*  
*Identify realistic pollution linkages to groundwater.*  
*Install monitoring standpipes for gas and groundwater level monitoring.*  
*Assess the identified pollution linkages in the CSM.*

### 4.2 Scope of Works

The following scope of works was completed between the dates of 15<sup>th</sup> February and 24<sup>th</sup> February 2023:

- *Three Cable Percussive boreholes (BH01 to BH03) were advanced to depths of between 20.0m and 21.5m bgl*
- *Rotary Coring was then undertaken from base of the cable percussive boreholes to depths of between 45.0m to 50.0m bgl.*

The exploratory hole locations are presented on Groundtech Plan GRO-22239-P04 and the exploratory hole logs are in *Appendix 3*.

The exploratory holes were positioned to establish the stratification beneath the site, and target areas of concern as summarised in the table below:

| Location     | Target Rationale              |
|--------------|-------------------------------|
| BH01 to BH03 | Targeting Bedrock Groundwater |
| BH01, BH02   | Areas of former buildings     |

The exploratory holes were logged by a suitably experienced geo-environmental engineer in general accordance with the following current guidance:

- *BS 5930 'Code of Practice for Site Investigations' 2015.*
- *BS EN 14688-1:2002 'Geotechnical Investigation and Testing – Identification and classification of soil'.*
- *BS EN ISO 14689:2002 "Geotechnical investigation and testing – Identification and classification of rock".*

### 4.3 Soil Sampling

During the intrusive investigation, representative samples were taken at regular intervals, changes of strata and where evidence of contamination existed. Laboratory analysis was scheduled on the samples obtained.

The samples obtained are summarised in the table below:

| Soil Sample                    | Number |
|--------------------------------|--------|
| <i>Environmental Sample</i>    | 42     |
| <i>Disturbed Sample</i>        | -      |
| <i>Bulk Sample</i>             | -      |
| <i>Undisturbed U100 Sample</i> | -      |

The samples have been obtained in accordance with current environmental guidance. The sampling plan has been designed to obtain samples from all required strata using the correct methodology.

Disturbed samples of soil for geo-environmental testing were placed in the correct sampling containers as required by the laboratory in accordance with their MCERTS and UKAS Accreditation. Transportation was arranged in a timely manner and the samples were at the correct temperature.

The sample locations and depths are recorded on the exploratory logs.

#### 4.4 Geo-Environmental Testing

To inform the Generic Quantitative Risk Assessment, the following geo-environmental testing was scheduled to assess the risk from contamination on the site. The testing is based on the potential sources identified in the PRA and observations during the Ground Investigation.

| Contaminant of Concern                                                                               | Matrix      | Number |
|------------------------------------------------------------------------------------------------------|-------------|--------|
| <i>Arsenic, Cadmium, Chromium (total and hex), Copper, Nickel, Mercury, Lead, Zinc, Selenium, pH</i> | <i>Soil</i> | 9      |
| <i>Total Petroleum Hydrocarbons (TPH CWG)</i>                                                        | <i>Soil</i> | 9      |
| <i>Semi Volatile Organic Compounds (SVOC)</i>                                                        | <i>Soil</i> | 9      |
| <i>Volatile Organic Compounds (VOC)</i>                                                              | <i>Soil</i> | 9      |

The Geo-Environmental Laboratory Testing Results for soil are presented in *Appendix 4* and the groundwater testing results in *Appendix 5*.

#### 4.5 Groundwater Monitoring/Sampling

Groundwater sampling installations were constructed in the boreholes. The standpipes consisted of HDPE pipe - a bentonite seal was placed around the plain pipe and a clean gravel pack was placed around the slotted pipe. A summary of the installation construction is presented in the table below:

| Location    | Depth        | Response Zone (m bgl) | Targeted Strata | Reason                         |
|-------------|--------------|-----------------------|-----------------|--------------------------------|
| <i>BH01</i> | <i>39.0m</i> | <i>33.0 – 39.0</i>    | <i>Bedrock</i>  | <i>Ground Gas/Ground Water</i> |
| <i>BH02</i> | <i>26.0m</i> | <i>20.0 – 26.0</i>    | <i>Bedrock</i>  | <i>Ground Gas/Ground Water</i> |
| <i>BH03</i> | <i>28.0m</i> | <i>22.0 – 28.0</i>    | <i>Bedrock</i>  | <i>Ground Gas/Ground Water</i> |

Well development was carried out to ensure no cross contamination from the drilling activities remained in the water column in the well. During the return visit, the installations were purged to a minimum three times the volume of the water column in the borehole prior to sampling, samples were taken between 7 and 17 days after installation. Purging was undertaken at a slower rate than the well development, and the sampling at a slower rate again.

The method of sampling selected was using low flow pumping with a bladder pump due to the contamination identified during the Preliminary Risk Assessment.

A water meter was used to test the pH, temperature and conductivity before sampling until equilibrium conditions were met in accordance with BS 10175 guidelines.

Samples were sent to the UKAS Accredited laboratory the same day, sampling was carried out in general accordance with BS 5930 and BS 5667.

Groundwater data are presented in *Appendix 6*.

## 5.0 GROUND MODEL

### 5.1 Made Ground

The entire site was surfaced with grey concrete to a maximum depth of 0.23m bgl.

Made Ground was encountered beneath the site to a maximum depth of 1.0m bgl. Two main Made Ground populations were encountered during the investigation and are described below:

- *Black slightly sandy silty clay was encountered in BH01 between 0.19m and 1.00m bgl.*
- *Brown sandy subangular to subrounded fine to coarse gravel of mixed lithologies including brick was encountered in BH02 and BH03 from 0.16m to 0.5m and 0.23m to 0.5m bgl respectively.*



### 5.2 Natural Ground

The natural strata encountered generally confirmed the published geological records. Three main natural stratifications encountered during the investigation and are described below:

- *Soft to stiff brown grey slightly silty slightly sandy, occasionally sandy Clay was encountered in BH01, BH02 and BH03 from a minimum depth of 0.5m to a maximum depth of 13.0m bgl.*
- *Brown slightly clayey, occasionally silty fine Sand was encountered in BH01 and BH02 from a minimum depth of 6.0m to 14.0m bgl.*
- *Firm brown silty Clay was encountered in BH02 and BH03 from a minimum depth of 13.0m to a maximum depth of 20.5m bgl.*

*Brown slightly sandy Silt was only encountered in BH01 between 9.0m to 13.0m bgl.*

### 5.3 Bedrock

Red Mudstone was encountered in BH01, BH02 and BH03 at a minimum depth of 20.0m to a maximum of 48.5m bgl.

Red Sandstone was encountered in BH01 and BH03 at a minimum depth of 43.0m to a maximum of 50.0m bgl.

### 5.4 Groundwater

Groundwater strikes were encountered in BH01, BH02 and BH03 between 23.0m to 36.0m bgl and was encountered within the bedrock strata.

| Location    | Depth of Groundwater Strike (m bgl) | Strata              |
|-------------|-------------------------------------|---------------------|
| <i>BH01</i> | <i>36.0</i>                         | <i>Red Mudstone</i> |
| <i>BH02</i> | <i>23.0</i>                         | <i>Red Mudstone</i> |
| <i>BH03</i> | <i>24.5</i>                         | <i>Red Mudstone</i> |

### 5.5 Watching Brief

A watching brief was maintained during the Ground Investigation for visual and olfactory evidence of contamination.

No olfactory or visual evidence of contamination was noted in the soils or groundwater.

### 5.6 Excavation/Borehole Stability

No evidence of spalling or collapse was noted during excavation of the boreholes.

### 5.7 Excavation/Borehole Progress

No slow progress was encountered.

## 6.0 CONTROLLED WATERS ASSESSMENT

### 6.1 Geo-Environmental Testing Results - Soils

Samples of Made Ground have been tested for a range of relevant Contaminants of Concern associated with the chemical works historic use.

The strata or sources of contamination targeted by the laboratory testing scheduled is summarised in the table below:

| Strata                      | Number of Samples Tested | Locations               |
|-----------------------------|--------------------------|-------------------------|
| <i>Granular Made Ground</i> | 3                        | <i>BH01, BH02, BH03</i> |
| <i>Natural Strata</i>       | 3                        | <i>BH01, BH02, BH03</i> |
| <i>Bedrock Strata</i>       | 3                        | <i>BH01, BH02, BH03</i> |

A summary of the Geo-Environmental Testing results is presented below:

| Metals                                            |               |
|---------------------------------------------------|---------------|
| Contaminant                                       | Range (mg/kg) |
| <i>Arsenic</i>                                    | 3.5 – 485.2   |
| <i>Cadmium</i>                                    | <0.1 – 1.8    |
| <i>Chromium</i>                                   | 25.2 – 240.4  |
| <i>Copper</i>                                     | 7 - 147       |
| <i>Lead</i>                                       | 7 - 6530      |
| <i>Mercury</i>                                    | <0.1 – 0.4    |
| <i>Nickel</i>                                     | 10.2 – 50.8   |
| <i>Selenium</i>                                   | <1.0 - 3      |
| <i>Zinc</i>                                       | 20 - 85       |
| Speciated Polycyclic Aromatic Hydrocarbons (PAHs) |               |
| Contaminant                                       | Range (mg/kg) |
| <i>Naphthalene</i>                                | <0.01– 0.457  |
| <i>Acenaphthylene</i>                             | <0.01 – 0.061 |
| <i>Acenaphthene</i>                               | <0.01 – 0.36  |
| <i>Fluorene</i>                                   | <0.01 – 0.426 |
| <i>Phenanthrene</i>                               | <0.01 – 3.227 |
| <i>Anthracene</i>                                 | <0.01 – 0.855 |
| <i>Fluoranthene</i>                               | <0.01 – 5.018 |
| <i>Pyrene</i>                                     | <0.01 – 4.813 |
| <i>Benzo(a)anthracene</i>                         | <0.01 – 2.124 |
| <i>Chrysene</i>                                   | <0.01 – 2.16  |
| <i>Benzo(b)fluoranthene</i>                       | <0.01 – 3.432 |
| <i>Benzo(k)fluoranthene</i>                       | <0.01 – 3.432 |
| <i>Benzo(a)pyrene</i>                             | <0.01 – 2.402 |
| <i>Indeno(123cd)pyrene</i>                        | <0.01 – 1.094 |
| <i>Dibenzo(ah)anthracene</i>                      | <0.01 – 0.399 |

|                                               |                  |
|-----------------------------------------------|------------------|
| <i>Benzo(ghi)perylene</i>                     | <0.01 – 1.394    |
| <b>Total Petroleum Hydrocarbons (TPH CWG)</b> |                  |
| Contaminant                                   | Range (mg/kg)    |
| >C5-C6                                        | <0.1             |
| >C6-C8                                        | <0.1             |
| >C8-C10                                       | <0.1             |
| >C10-C12                                      | <0.1 – 7.1       |
| >C12-C16                                      | <4 - 18          |
| >C16-C21                                      | <7 - 19          |
| >C21-C35                                      | <7 - 152         |
| <i>Total aliphatics C5-35</i>                 | <19 - 746        |
| Contaminant                                   | Range (mg/)      |
| >C5-EC7                                       | <0.1             |
| >EC7-EC8                                      | <0.1             |
| >EC8-EC10                                     | <0.1             |
| >EC10-EC12                                    | <0.2 – 4.6       |
| >EC12-EC16                                    | <4 - 39          |
| >EC16-EC21                                    | <7 - 981         |
| >EC21-EC35                                    | <7 - 990         |
| <i>Total aromatics C5-35</i>                  | <19.0 – 2015     |
| <i>MTBE</i>                                   | <2.0 ug/kg       |
| <i>Benzene</i>                                | <3.0 ug/kg       |
| <i>Toluene</i>                                | <3.0 – 10 ug/kg  |
| <i>Ethylbenzene</i>                           | <3.0 – 9.0 ug/kg |
| <i>m-Xylene</i>                               | <5.0 – 24 ug/kg  |
| <i>p-Xylene</i>                               | <5.0 ug/kg       |
| <i>o-Xylene</i>                               | <3.0 ug/kg       |

Generally Volatile Organic Compounds (VOCs) and Semi-Volatile Organic Compounds (SVOCs) tested for were recorded at concentrations below the laboratory limit of detection. Very low concentrations of limited chlorinated solvents were detected in the SVOC suite.

A high pH level of 10.71 was detected within BH02 at 0.5m bgl, pH levels were typically neutral or slightly alkaline.

## 6.2 Discussion - Soils

Made Ground was encountered beneath the site to between 0.5m and 1.0m bgl. No significant visual evidence of contamination was noted and no olfactory evidence of potential contamination was noted during the investigation.

### *Metals*

All metal concentrations were very low with the exception of arsenic and lead in the shallow Made Ground in BH01, and lead and hexavalent chromium in the shallow Made Ground in BH02. These concentrations are likely to be associated with minor constituents in the Made Ground imported to construct the sub base to the hardstanding external areas and not from contamination sources on the site.

The concentrations in all three samples tested in BH03 were very low, as well as in the natural soils in both BH01 and BH02.

No leachate testing was undertaken on the soil samples in the natural due to the very low concentrations, the Made Ground was between 0.5m and 1.0m thick and a minimal source, therefore leachate testing was not scheduled on these samples.

#### *Total Petroleum Hydrocarbons (TPH CWG)*

Hydrocarbon concentrations including BTEX were generally below laboratory detection limits with the exception of the Made Ground in BH01, as discussed above this is considered to be associated with minor constituents such as tarmac or ash. This is supported by a large proportion of the total concentrations being recorded in the heavy aromatic range.

#### *Speciated Polycyclic Aromatic Hydrocarbons (PAHs)*

Low levels of speciated PAHs were recorded in the Made Ground in BH01 and BH02 which supports the above synopsis minor constituents in the Made Ground are the minor source.

Extremely low levels of speciated PAHs were recorded in BH03 in all 3 samples.

#### *Volatile Organic Compounds (VOCs)/Semi Volatile Organic Compounds (SVOCs)*

Very low levels of chlorinated solvents and BTEX were recorded in the Made Ground in BH01, slightly above laboratory detection limits. All other VOCs were recorded below the detection limit during laboratory testing.

No concentrations above detection limits for VOCs and SVOCs were recorded in BH02 or BH03.

The above discussion confirms the primary sources at the site have not impacted the soils.

Some deviations have been recorded for the soils due to exceeding holding times, this is predominantly for EPH. The sample were stored in refrigerated conditions and the exceeding holding time is not considered to detrimentally affect the results.

### **6.3 Geo-Environmental Testing Results - Groundwater**

Two rounds of groundwater sampling was undertaken between the 10<sup>th</sup> March and 31<sup>st</sup> March 2023 and tested for the same suite of contaminants as the soils and the results compared with reference to a selection of guidance documents as detailed at the end of this report.

The implementation of the Water Framework Directive (WFD) is to protect and enhance the quality of groundwater and groundwater-dependent ecosystems. The objective of the WFD requires all groundwater bodies (GWBs) are of 'good' status in terms of water quality. This status is based on thresholds for the chemical constituents of groundwater and their impact on ecosystems. Preventing pollution is by far the most sustainable and cost-effective way of maintaining good groundwater quality. The EA are committed to the 'prevent or limit' approach reflected in EU and domestic legislation.

Priority is under the Water Framework Directive to protect water supplies intended for human consumption and ensure protection of groundwater quality that supplies dependent ecosystems. After first guidance in 1992 the following significant guidance has been introduced:

- *Water Framework Directive (2000/60/EC) and the Water Act 2003.*
- *The State of Groundwater in England and Wales 2006.*
- *Second phase of the environmental permitting regime in 2010 replacing the Groundwater Regulations (1999, 2009).*
- *Groundwater Daughter Directive.*

Pollutants can be divided into those that break down easily (degradable pollutants) and those that do not (non-degradable pollutants). The Water Framework Directive introduced the concept of 'hazardous substances' and 'non-hazardous pollutants', which replaced the previous List I and List II of substances considered to pose the greatest threat to the environment.

- *Hazardous substances* are the most toxic and must be prevented from entering groundwater. Substances in this list may be disposed of to the ground, under a permit, but must not reach groundwater. They include pesticides, sheep dip, solvents, hydrocarbons, mercury, cadmium and cyanide.
- *Non-hazardous pollutants* are less dangerous and can be discharged to groundwater under a permit but must not cause pollution. Examples include sewage, trade effluent and most wastes. Non-hazardous pollutants include any substance capable of causing pollution and the list is much wider than the previous List II of substances. For example, nitrate is now a non-hazardous pollutant whereas before it was not a List II substance.

Polluting substances in groundwater can occur as a gas (gaseous phase) or dissolved in water (aqueous phase), or as a non-aqueous phase liquid (NAPL). Some pollutants include substances that dissolve readily in water. These are said to have high solubility; an example is MTBE. Substances that have low solubility (such as oil) are referred to as non-aqueous phase liquids (NAPLs). NAPLs behave differently in groundwater depending on whether they are lighter or heavier than water. Light non-aqueous phase liquids (LNAPLs) may float on the water table whereas dense non-aqueous phase liquids (DNAPLs) may sink through the aquifer until they reach an impermeable layer. They may then generate plumes of contamination. In both cases, the slowly dissolving pollutant may form a plume of dissolved contamination which moves with the groundwater flow.

The results have been compared to EQS screening levels due to the proximity of the canal, the concentrations have also been compared to DWS screening values due to the proximity of the Principal Aquifer, although no potable abstractions are recorded within 2000m. A table summarising the groundwater testing results is presented below:

| Contaminant         | Metals       |              |            |             |           |
|---------------------|--------------|--------------|------------|-------------|-----------|
|                     | Range (ug/l) | EQS (ug/l)   | DWS (ug/l) | Exceedances | Locations |
| Arsenic             | <2.5 – 5.4   | 50           | 10         | -           | -         |
| Boron               | <0.5 - 114   | 2000         | -          | -           | -         |
| Cadmium             | <0.5         | <0.08 - 0.25 | 5          | -           | -         |
| Chromium            | <1.5         | 4.7          | 50         | -           | -         |
| Hexavalent Chromium | <0.006       | 3.4          | -          | -           | -         |
| Copper              | <7.0         | 1 - 28       | 2000       | -           | -         |
| Lead                | <5.0         | 1.2          | 10         | -           | -         |
| Mercury             | <1.0         | 1            | 1          | -           | -         |
| Nickel              | <2.0         | 4            | 20         | -           | -         |
| Selenium            | <3.0         | 8 - 125      | 10         | -           | -         |

|                                         |                |            |               |             |              |
|-----------------------------------------|----------------|------------|---------------|-------------|--------------|
| Zinc                                    | <3.0 – 4.0     | 1000       | 5000          | -           | -            |
| Polycyclic Aromatic Hydrocarbons (PAHs) |                |            |               |             |              |
| Contaminant                             | Range (ug/l)   | EQS (ug/l) | DWS (ug/l)    | Exceedances | Locations    |
| Benzo(a)pyrene                          | <0.005 – 0.019 | 0.00017    | 0.01          | 1           | BH03 DWS/EQS |
| Indeno(123cd)pyrene                     | <0.005 – 0.013 | 0.00017    | 0.1           | 1           | BH03 EQS     |
| Benzo(ghi)perylene                      | <0.005 – 0.014 | 0.00017    |               | 1           | BH03 EQS     |
| Benzo(b)fluoranthene                    | <0.008 – 0.037 | 0.00017    |               | 1           | BH03 EQS     |
| Benzo(k)fluoranthene                    | <0.008 – 0.015 | 0.00017    |               | 1           | BH03 EQS     |
| TPH CWG – Aliphatics                    |                |            |               |             |              |
| Contaminant                             | Range (ug/l)   | EQS (ug/l) | DWS (ug/l)    | Exceedances | Locations    |
| >C5-C6                                  | <10            | 15,000     | 10            | -           | -            |
| >C6-C8                                  | <10            | 15,000     |               | -           | -            |
| >C8-C10                                 | <10            | 300        |               | -           | -            |
| >C10-C12                                | <5.0           | 300        |               | -           | -            |
| >C12-C16                                | <10            | 300        |               | -           | -            |
| >C16-C35                                | <10            | -          |               | -           | -            |
| Total aliphatics C5-35                  | <10            | -          |               | -           | -            |
| TPH CWG - Aromatics                     |                |            |               |             |              |
| Contaminant                             | Range (ug/l)   | EQS (ug/l) | DWS (ug/l)    | Exceedances | Locations    |
| >C5-EC7                                 | <10            | -          | 10            | -           | -            |
| >EC7-EC8                                | <10            | -          |               | -           | -            |
| >EC8-EC10                               | <10            | -          |               | -           | -            |
| >EC10-EC12                              | <5             | 90         |               | -           | -            |
| >EC12-EC16                              | <10            | 90         |               | -           | -            |
| >EC16-EC21                              | <10            | 90         |               | -           | -            |
| >EC21-EC35                              | <10            | 90         |               | -           | -            |
| Total aromatics C5-35                   | <10            | -          |               | -           | -            |
| Total aliphatics and aromatics(C5-35)   | <10            | -          |               | -           | -            |
|                                         |                |            |               |             |              |
| MTBE                                    | <0.1           | 15         | 15            | -           | -            |
| Benzene                                 | <0.5           | 10         | 1             | -           | -            |
| Toluene                                 | <5.0           | 74         | 700           | -           | -            |
| Ethylbenzene                            | <1.0           | 300        | 300           | -           | -            |
| m/p-Xylene                              | <2.0           | 30         | 500           | -           | -            |
| o-Xylene                                | <1.0           | 30         |               | -           | -            |
| Others                                  |                |            |               |             |              |
| Total Hardness                          |                |            | 270 - 450mg/l |             |              |

Slightly elevated speciated PAH concentrations were recorded in BH03 during the first visit and no deviations were reported. During the second visit no elevated concentrations were recorded, the bladder pump broke during the sampling and a return visit was undertaken to get the sample for BH03 (Ref BH103), this sample was stored by the laboratory and exceed holding times, however this is not considered to have effected the results due to the storage conditions adopted by the laboratory.

## 6.4 Generic Quantitative Risk Assessment - Groundwater

### *Controlled Waters Setting*

Strata underlying the site consist of Made Ground to a maximum depth of 1.0m bgl generally comprised granular soils. This was underlain by natural strata which generally consisted of soft to stiff brown grey variably silty variably sandy Clay and brown slightly clayey occasionally silty fine Sand to a maximum depth of 21.5m bgl which are considered to be Glacial Till. Red Mudstone was encountered in all boreholes at a minimum depth of 20.0m to a maximum of 48.5m bgl. Red Sandstone was encountered in BH01 and BH03 at a minimum depth of 43.0m to a maximum of 50.0m bgl.

Groundwater was encountered within the Red Mudstone bedrock between 23.0m and 36.0m bgl.

The Glacial Till is classified as a Secondary (Undifferentiated) Aquifer and the Manchester Marls bedrock is a Secondary B Aquifer, the Chester Pebble Beds are located 15m to the south of the site and classified as a Principal Aquifer. There are no groundwater Source Protection Zones within 500m of the site and the closest groundwater abstraction license is 57m east of the site. No potable groundwater abstraction licences are recorded within 2km of the site. The Manchester and East Cheshire Permo-Triassic Sandstone Aquifer in the area are indicated to have had a poor chemical rating and poor overall rating in 2015.

The nearest watercourse is the Ashton Canal 10m south of the site and the contaminants tested for have been compared to EQS screening levels. There are no other surface water features located within 250m of the site. The Chester Pebble Beds are situated 15m to the South of the site and are classified as a Principal Aquifer, for completeness the groundwater testing results have also been compared with Drinking Water Standards (DWS).

All of the Contaminants of Concern which includes metals, speciated PAHs, VOCs, SVOCs and hydrocarbons have been recorded at concentrations below the relevant EQS and DWS screening levels with the exception of slight exceedances in BH03 for select speciated Polycyclic Aromatic Hydrocarbons (PAHs).

The results of testing indicate that the former use of the site has not impacted the groundwater significantly. If the subject site had impacted the groundwater beneath the site - evidence of hydrocarbons, VOCs and SVOCs would have been detected in the groundwater samples associated with the chemical works.

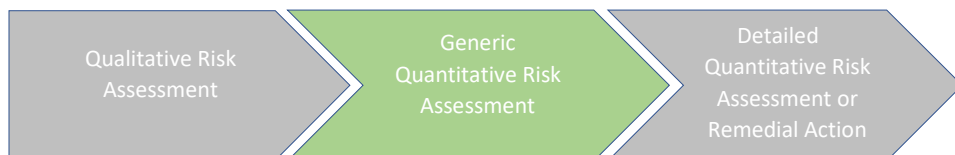
The assessment is based on Level 2 Remedial Target Values where the compliance point is beneath the site (using EQS/DWS screening levels). A Hydrogeological Detailed Quantitative Risk Assessment (DQRA) is not required, however if a DQRA was undertaken resulting in the compliance point moving to the nearest abstraction or in this case a dummy compliance point 50m from the site, no risk to controlled waters would be further confirmed.

The surface of the Mudstone bedrock dips to the north/north east. The groundwater levels recorded during the Ground Investigation and also by the monitoring indicate the groundwater flow direction is to the north/north east away from the Principal Aquifer.

## 6.5 Revised Pollution Linkage Assessment

A revised pollution linkage assessment has been undertaken based on the findings of the Ground Investigation and testing to identify any realistic pollution linkages in order to quantify the risks to controlled waters. An Illustrative Revised CSM is presented on *GRO-22239-P10*.

## Controlled Waters Pollution Linkage Assessment



- The table below represents the second stage in the land quality risk assessment process – **Generic Quantitative Risk Assessment**.
- In order for a development site to be deemed 'suitable for use' the level of risk needs to be reduced to an acceptable level - low to negligible risk. The purpose of each stage of risk assessment is to establish if there is a requirement for additional stages of assessment in order to have sufficient confidence to support a risk characterisation or remedial action.

| Conceptual Site Model |                    |                                                                                                                                      |            |          | Generic Quantitative Risk Assessment |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------|------------|----------|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PL                    | Potential source   | Pollution linkage                                                                                                                    | Likelihood | Severity | Level of risk                        | Rationale                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| PL6                   | Contaminated Soils | <p>Impaction of groundwater from soil contamination (diffuse and point).</p> <p>Impaction of groundwater from groundwater plume.</p> | Unlikely   | Medium   | Low                                  | <p>A low risk was identified by the preliminary pollution linkage assessment, the Environment Agency required an intrusive Ground Investigation in accordance with LCRM to demonstrate the underlying aquifer is not at risk.</p> <p>Made Ground to between 0.5m and 1.0m bgl was encountered during the Ground Investigation, no visual or olfactory evidence was noted. Gross mobile contamination was not generally not encountered in the Made Ground, locally metals and speciated PAH concentrations were recorded. No contaminants were detected in the natural soils. Bunds and capture drains were across the site, limiting the spread of any chemicals that may have been spilled or leaked.</p> <p>Geological maps indicate that the site is underlain by Glacial Till (Secondary Undifferentiated Aquifer) which consists of 12m to 20m of Clay/Silt. The bedrock underlying the site is the Manchester Marls Formation (Secondary B Aquifer) comprising red brown moderately cemented Mudstone. The Chester Pebble Beds Formation (Principal Aquifer) is present c.15m to the south.</p> |

| Conceptual Site Model |                    |                                                                           |            |          | Generic Quantitative Risk Assessment |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------|--------------------|---------------------------------------------------------------------------|------------|----------|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PL                    | Potential source   | Pollution linkage                                                         | Likelihood | Severity | Level of risk                        | Rationale                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                       |                    |                                                                           |            |          |                                      | <p>The site is not within 500m of a SPZ there are no potable water abstractions within 2000m. A groundwater abstraction is c.57m to the east but is used for industrial processes.</p> <p>Over the two sampling visits, generally no elevated concentrations were recorded in the groundwater samples obtained with the exception of slightly elevated speciated PAH concentrations in BH03 during the first visit. No elevated concentrations were recorded during the second round of monitoring. The groundwater testing confirms the groundwater in the bedrock beneath the site has not been impacted by the subject site. No plausible pollution linkage exists.</p> |
| PL7                   | Contaminated Soils | Migration of soil and groundwater contamination impacting surface waters. | Unlikely   | Medium   | Low                                  | <p>Pollution Linkage 7 refers to the impaction of the Ashton Canal to the immediate south of the site from contaminated soils and groundwater. No other surface water features are within 250m.</p> <p>Significant mobile contamination associated with the potential sources has not been identified through the Ground Investigation or geo-environmental testing. The groundwater is at a significant depth beneath the canal and the canal is clay lined - a closed system, therefore any potential mobile contaminants through the ground will not be able to enter the canal.</p> <p>A viable pollution linkage is not considered to exist.</p>                      |



## 6.6 Outline Remedial Strategy

### *Controlled Waters*

Based on the groundwater testing results, groundwater beneath the site has not been impacted by the subject site and no specific remedial works are required.

## 7.0 FINAL APPRAISAL

### 7.1 Land Quality

Historically the site has been used as a chemical factory that has processed rubber additive compounds. Zone A, where the Ground Investigation has been undertaken, has not been part of the working chemical production since 1980s. It is occupied by office buildings and a hardsurfaced car park.

Made Ground was encountered beneath the site to between 0.5m and 1.0m bgl and comprised granular material. No visual or olfactory evidence of contamination was noted.

No gross contamination was noted in the Made Ground or natural soils.

The two rounds of groundwater testing has confirmed the subject site is not impacting the underlying aquifers. The significant thickness of Glacial Till has also acted as an aquitard protecting the aquifers.

### 7.2 Required Further Work

No further work is considered necessary because no risk to controlled waters has been identified.

## 8.0 RELEVANT INDUSTRY REFERENCES

British Standards Institution. *Investigation of Potentially Contaminated sites - code of practice*. BS 10175:2017.

British Standards Institution '*Code of Practice for Site Investigations*' BS 5930:2015

British Standards Institution "*Geotechnical investigation and testing – Identification and classification of soil*" BS EN ISO 14688:2002.

British Standards Institution "*Geotechnical investigation and testing – Identification and classification of rock*" BS EN ISO 14689:2002.

LCRM (Land Contamination Risk Management), April 2021.

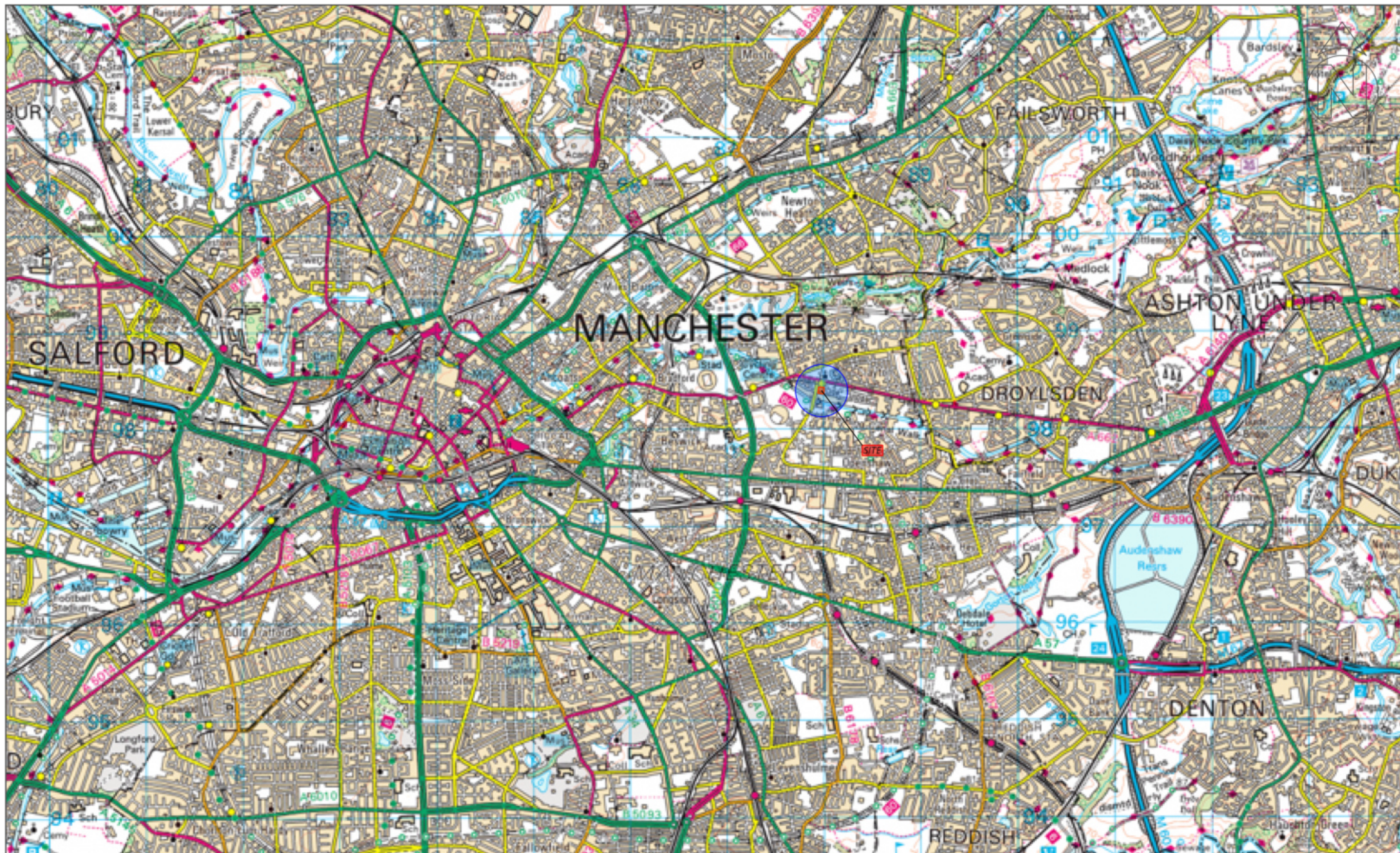
Water Framework Directive.

Environmental Quality Standards.

UK Drinking Water Standards: Water Supply (Water Quality) Regulations 1989 (SI 1989/1147) and Water Supply (Water Quality) Regulations

Environment Agency. R&D Publication 20. Methodology for the Derivation of Remedial Targets for Soil and Groundwater to Protect Water Resources. 1999.

## APPENDIX 1 - Plans



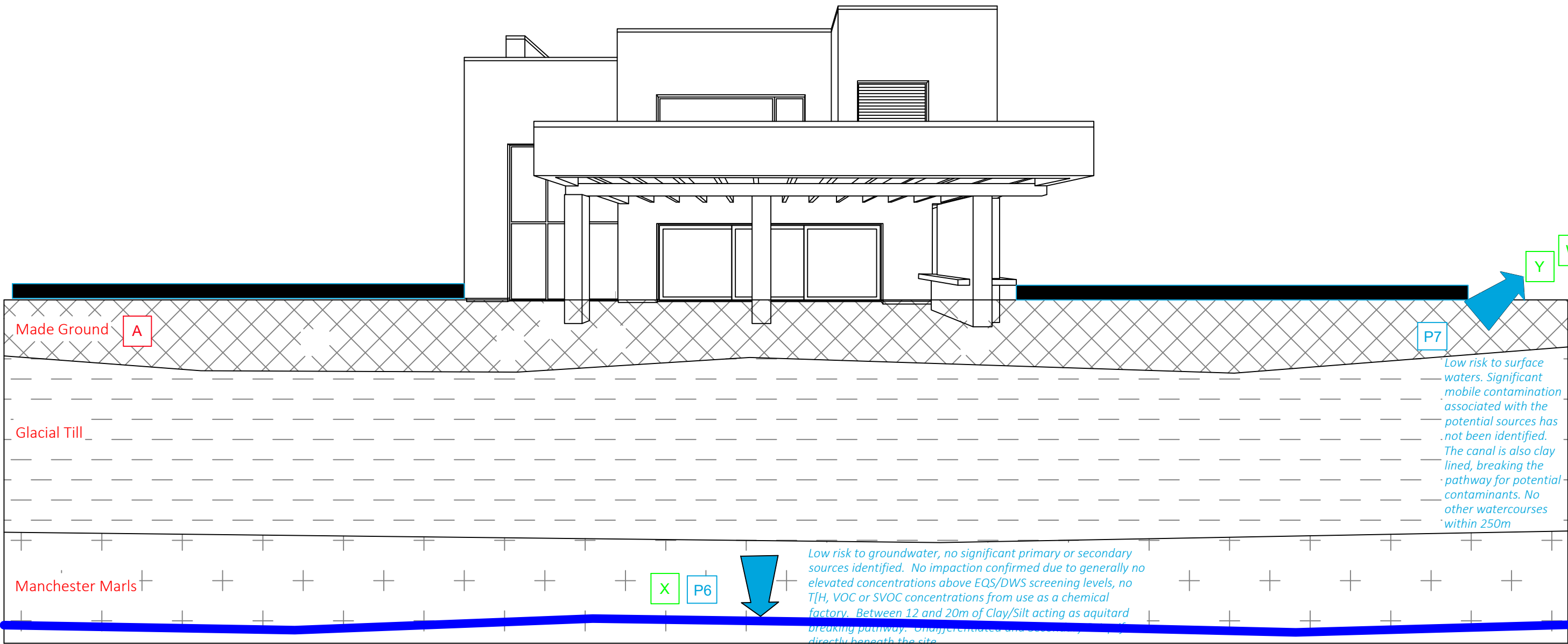
|                                                                                                                        |                                |              |         |  |      |             |   |                                                                                                                     |
|------------------------------------------------------------------------------------------------------------------------|--------------------------------|--------------|---------|--|------|-------------|---|---------------------------------------------------------------------------------------------------------------------|
| <br><b>GROUNDTECH</b><br>CONSULTING | CLIENT                         | DATE         |         |  |      | Status      |   | Notes<br> Location of the site |
|                                                                                                                        | EVONIK CHEMICALS LTD           | JANUARY 2021 |         |  |      | Preliminary |   |                                                                                                                     |
|                                                                                                                        | PROJECT TITLE                  | SCALE        |         |  |      | Draft       |   |                                                                                                                     |
|                                                                                                                        | EVONIK CHEMICAL WORKS, CLAYTON | NTS          |         |  |      | Issued      | ● |                                                                                                                     |
|                                                                                                                        | PLAN TITLE                     | PLAN NUMBER  |         |  |      | For Comment |   |                                                                                                                     |
| PROJECT LOCATION PLAN                                                                                                  | GRO-20221-P01                  | Rev.         | Details |  | Date | Approved    |   |                                                                                                                     |



|                                                         |                                                                          |                                                 |  |      |         |             |          |                                                            |
|---------------------------------------------------------|--------------------------------------------------------------------------|-------------------------------------------------|--|------|---------|-------------|----------|------------------------------------------------------------|
| <div>GROUNDTECH</div> <div>CONSULTING</div> <div></div> | <div>CLIENT</div> <div>KENNEDY REDFORD</div>                             | <div>DATE</div> <div>MARCH 2023</div>           |  |      |         | Status      |          | <div>Notes</div> <div> Approximate borehole location</div> |
|                                                         | <div>PROJECT TITLE</div> <div>EVONIK CHEMICAL WORKS, CLAYTON</div>       | <div>SCALE</div> <div>NTS</div>                 |  |      |         | Preliminary |          |                                                            |
|                                                         | <div>PLAN TITLE</div> <div>PROPOSED EXPLORATORY HOLE LOCATION PLAN</div> | <div>PLAN NUMBER</div> <div>GRO-20221-P04</div> |  |      |         | Draft       |          |                                                            |
|                                                         |                                                                          |                                                 |  |      |         | Issued      |          |                                                            |
|                                                         |                                                                          |                                                 |  |      |         | For Comment |          |                                                            |
|                                                         |                                                                          |                                                 |  | Rev. | Details | Date        | Approved |                                                            |

| SOURCES                                                             | POLLUTION LINKAGES                                                                                                                     | RECEPTORS                                                                                                                                |
|---------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| A. Primary and Secondary Source - Contaminated soils / Made Ground. | P6. Impaction of groundwater from soil contamination.<br>P7. Migration of soil and groundwater contamination impacting surface waters. | W. Adjacent Ashton Canal.<br>X. Groundwater within underlying Secondary Aquifers & adjacent Principal Aquifer.<br>Y. Nearest watercourse |

Proposed New Refurbished Offices and Hardsurfacing



|  |                                |               |      |         |             |          |       |
|--|--------------------------------|---------------|------|---------|-------------|----------|-------|
|  | CLIENT                         | DATE          |      |         | Status      |          | Notes |
|  | EVONIK CHEMICALS LTD           | MARCH 2023    |      |         | Preliminary |          |       |
|  | PROJECT TITLE                  | SCALE         |      |         | Draft       |          |       |
|  | EVONIK CHEMICAL WORKS, CLAYTON | NTS           |      |         | Issued      | ●        |       |
|  | PLAN TITLE                     | PLAN NUMBER   |      |         | For Comment |          |       |
|  | CONTROLLED WATERS CSM          | GRO-20221-P10 | Rev. | Details | Date        | Approved |       |

## APPENDIX 2 - Site Photographs



Photograph 1



Photograph 2



Photograph 3



Photograph 4

## APPENDIX 3 - Exploratory Hole Logs



GROUNDTECH  
CONSULTING

# Borehole Log

Borehole No.

**BH01**

Sheet 1 of 5

Project Name: EVONIK

Project No.  
GRO-20221

Co-ords: -

Hole Type  
CP

Location: CLAYTON

Level:

Scale  
1:50

Client: EVONIK CHEMICALS LTD

Dates: 15/02/2023 - 17/02/2023

Logged By  
EW

| Well | Water Strikes | Samples and In Situ Testing |      |         | Depth (m) | Level (m) | Legend | Stratum Description                                                                                                                                                                   |    |
|------|---------------|-----------------------------|------|---------|-----------|-----------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
|      |               | Depth (m)                   | Type | Results |           |           |        |                                                                                                                                                                                       |    |
|      |               |                             |      |         | 0.19      |           |        | MADE GROUND. Concrete.                                                                                                                                                                |    |
|      |               | 0.50                        | ES   |         |           |           |        | MADE GROUND. Black slightly sandy silty clay. Sand is fine to coarse.                                                                                                                 |    |
|      |               | 1.00                        | ES   |         | 1.00      |           |        | Firm brown grey sandy gravely CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to medium of mixed lithologies including quartzite.                                  | 1  |
|      |               | 2.00                        | ES   |         | 2.00      |           |        | Firm to stiff brown grey gravely slightly silty slightly sandy CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to medium of mixed lithologies including quartzite. | 2  |
|      |               | 3.00                        | ES   |         |           |           |        |                                                                                                                                                                                       | 3  |
|      |               | 4.00                        | ES   |         |           |           |        |                                                                                                                                                                                       | 4  |
|      |               | 5.00                        | ES   |         |           |           |        |                                                                                                                                                                                       | 5  |
|      |               | 6.00                        | ES   |         | 6.00      |           |        | Brown gravely slightly clayey fine SAND. Gravel is angular to subangular fine to medium of mixed lithologies including quartzite.                                                     | 6  |
|      |               | 7.00                        | ES   |         |           |           |        |                                                                                                                                                                                       | 7  |
|      |               | 8.00                        | ES   |         |           |           |        |                                                                                                                                                                                       | 8  |
|      |               | 9.00                        | ES   |         | 9.00      |           |        | Brown slightly gravely sandy SILT. Sand is fine to coarse. Gravel is angular to subangular fine to medium of mixed lithologies including quartzite.                                   | 9  |
|      |               | 10.00                       | ES   |         |           |           |        |                                                                                                                                                                                       | 10 |

Continued on next sheet

## Remarks

1. Location cleared of services using Utility Clearance. 2. Concrete cored to 0.19m bgl. 3. Cable percussive taken to 21.5m bgl. 4. Rotary open holing taken to 45.00m bgl. 5. Groundwater was encountered at 36.00m. 6. Groundwater monitoring standpipe installed to 39.00m (33m plain, 6m slotted).





GROUNDTECH  
CONSULTING

# Borehole Log

Borehole No.

**BH01**

Sheet 2 of 5

Project Name: EVONIK

Project No.  
GRO-20221

Co-ords: -

Hole Type  
CP

Location: CLAYTON

Level:

Scale  
1:50

Client: EVONIK CHEMICALS LTD

Dates: 15/02/2023 - 17/02/2023

Logged By  
EW

| Well | Water Strikes | Samples and In Situ Testing |      |         | Depth (m) | Level (m) | Legend | Stratum Description                                                                                                                |    |
|------|---------------|-----------------------------|------|---------|-----------|-----------|--------|------------------------------------------------------------------------------------------------------------------------------------|----|
|      |               | Depth (m)                   | Type | Results |           |           |        |                                                                                                                                    |    |
|      |               | 13.00                       | ES   |         | 13.00     |           |        | Brown gravely clayey fine to coarse SAND. Gravel is angular to subangular fine to medium of mixed lithologies including quartzite. | 11 |
|      |               |                             |      |         |           |           |        |                                                                                                                                    | 12 |
|      |               |                             |      |         |           |           |        |                                                                                                                                    | 13 |
|      |               |                             |      |         |           |           |        |                                                                                                                                    | 14 |
|      |               |                             |      |         |           |           |        |                                                                                                                                    | 15 |
|      |               |                             |      |         |           |           |        |                                                                                                                                    | 16 |
|      |               |                             |      |         |           |           |        |                                                                                                                                    | 17 |
|      |               |                             |      |         |           |           |        |                                                                                                                                    | 18 |
|      |               |                             |      |         |           |           |        |                                                                                                                                    | 19 |
|      |               |                             |      |         |           |           |        |                                                                                                                                    | 20 |

Continued on next sheet

## Remarks

1. Location cleared of services using Utility Clearance. 2. Concrete cored to 0.19m bgl. 3. Cable percussive taken to 21.5m bgl 4. Rotary open holing taken to 45.00m bgl 5. Groundwater was encountered at 36.00m. 6. Groundwater monitoring standpipe installed to 39.00m (33m plain, 6m slotted).





GROUNDTECH  
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# Borehole Log

Borehole No.

**BH01**

Sheet 3 of 5

Project Name: EVONIK

Project No.  
GRO-20221

Co-ords: -

Hole Type  
CP

Location: CLAYTON

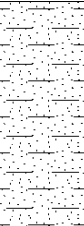
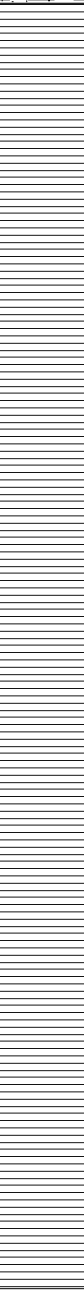
Level:

Scale  
1:50

Client: EVONIK CHEMICALS LTD

Dates: 15/02/2023 - 17/02/2023

Logged By  
EW

| Well | Water Strikes | Samples and In Situ Testing |      |         | Depth (m) | Level (m) | Legend                                                                             | Stratum Description |    |
|------|---------------|-----------------------------|------|---------|-----------|-----------|------------------------------------------------------------------------------------|---------------------|----|
|      |               | Depth (m)                   | Type | Results |           |           |                                                                                    |                     |    |
|      |               | 21.50                       | ES   |         | 21.50     |           |   | Red MUDSTONE.       | 21 |
|      |               |                             |      |         |           |           |  |                     | 22 |
|      |               |                             |      |         |           |           |                                                                                    |                     | 23 |
|      |               |                             |      |         |           |           |                                                                                    |                     | 24 |
|      |               |                             |      |         |           |           |                                                                                    |                     | 25 |
|      |               |                             |      |         |           |           |                                                                                    |                     | 26 |
|      |               |                             |      |         |           |           |                                                                                    |                     | 27 |
|      |               |                             |      |         |           |           |                                                                                    |                     | 28 |
|      |               |                             |      |         |           |           |                                                                                    |                     | 29 |
|      |               |                             |      |         |           |           |                                                                                    |                     | 30 |

Continued on next sheet

## Remarks

1. Location cleared of services using Utility Clearance. 2. Concrete cored to 0.19m bgl. 3. Cable percussive taken to 21.5m bgl. 4. Rotary open holing taken to 45.00m bgl. 5. Groundwater was encountered at 36.00m. 6. Groundwater monitoring standpipe installed to 39.00m (33m plain, 6m slotted).





GROUNDTECH  
CONSULTING

# Borehole Log

Borehole No.

**BH01**

Sheet 4 of 5

Project Name: EVONIK

Project No.  
GRO-20221

Co-ords: -

Hole Type  
CP

Location: CLAYTON

Level:

Scale  
1:50

Client: EVONIK CHEMICALS LTD

Dates: 15/02/2023 - 17/02/2023

Logged By  
EW

| Well | Water Strikes | Samples and In Situ Testing |      |         | Depth (m) | Level (m) | Legend | Stratum Description |    |
|------|---------------|-----------------------------|------|---------|-----------|-----------|--------|---------------------|----|
|      |               | Depth (m)                   | Type | Results |           |           |        |                     |    |
|      |               |                             |      |         |           |           |        |                     | 31 |
|      |               |                             |      |         |           |           |        |                     | 32 |
|      |               |                             |      |         |           |           |        |                     | 33 |
|      |               |                             |      |         |           |           |        |                     | 34 |
|      |               |                             |      |         |           |           |        |                     | 35 |
|      |               |                             |      |         |           |           |        |                     | 36 |
|      |               |                             |      |         |           |           |        |                     | 37 |
|      |               |                             |      |         |           |           |        |                     | 38 |
|      |               |                             |      |         |           |           |        |                     | 39 |
|      |               |                             |      |         |           |           |        |                     | 40 |

Continued on next sheet

## Remarks

1. Location cleared of services using Utility Clearance. 2. Concrete cored to 0.19m bgl. 3. Cable percussive taken to 21.5m bgl 4. Rotary open holing taken to 45.00m bgl 5. Groundwater was encountered at 36.00m. 6. Groundwater monitoring standpipe installed to 39.00m (33m plain, 6m slotted).







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# Borehole Log

Borehole No.

**BH02**

Sheet 1 of 5

Project Name: EVONIK

Project No.  
GRO-20221

Co-ords: -

Hole Type  
CP

Location: CLAYTON

Level:

Scale  
1:50

Client: EVONIK CHEMICALS LTD

Dates: 20/02/2023 - 23/02/2023

Logged By  
EW

| Well | Water Strikes | Samples and In Situ Testing |      |         | Depth (m) | Level (m) | Legend | Stratum Description                                                                                                                                            |    |
|------|---------------|-----------------------------|------|---------|-----------|-----------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
|      |               | Depth (m)                   | Type | Results |           |           |        |                                                                                                                                                                |    |
|      |               |                             |      |         | 0.16      |           |        | MADE GROUND. Concrete.                                                                                                                                         |    |
|      |               | 0.50                        | ES   |         | 0.50      |           |        | MADE GROUND. Brown sandy subangular to subrounded fine to coarse gravel of mixed lithologies. Sand is fine to coarse.                                          |    |
|      |               | 1.00                        | ES   |         |           |           |        | Firm brown gravely slightly sandy silty CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of mixed lithologies including quartzite. | 1  |
|      |               | 2.00                        | ES   |         |           |           |        |                                                                                                                                                                | 2  |
|      |               | 3.00                        | ES   |         |           |           |        |                                                                                                                                                                | 3  |
|      |               | 4.00                        | ES   |         |           |           |        |                                                                                                                                                                | 4  |
|      |               | 5.00                        | ES   |         |           |           |        |                                                                                                                                                                | 5  |
|      |               | 6.00                        | ES   |         |           |           |        |                                                                                                                                                                | 6  |
|      |               | 7.00                        | ES   |         |           |           |        |                                                                                                                                                                | 7  |
|      |               | 8.00                        | ES   |         |           |           |        |                                                                                                                                                                | 8  |
|      |               | 9.00                        | ES   |         | 9.00      |           |        | Brown gravely slightly clayey fine SAND. Gravel is angular to subangular fine to medium of mixed lithologies including quartzite.                              | 9  |
|      |               | 10.00                       | ES   |         |           |           |        |                                                                                                                                                                | 10 |

Continued on next sheet

## Remarks

1. Location cleared of services using Utility Clearance. 2. Concrete cored to 0.16m bgl. 3. Cable percussive taken to 20.50m bgl 4. Rotary open holing taken to 45.00m bgl 5. Groundwater was encountered at 23.00m. 6. Groundwater monitoring standpipe installed to 26.00m (20m plain, 6m slotted).





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# Borehole Log

Borehole No.

**BH02**

Sheet 2 of 5

Project Name: EVONIK

Project No.  
GRO-20221

Co-ords: -

Hole Type  
CP

Location: CLAYTON

Level:

Scale  
1:50

Client: EVONIK CHEMICALS LTD

Dates: 20/02/2023 - 23/02/2023

Logged By  
EW

| Well | Water Strikes | Samples and In Situ Testing |      |         | Depth (m) | Level (m) | Legend | Stratum Description                                                                                                               |    |
|------|---------------|-----------------------------|------|---------|-----------|-----------|--------|-----------------------------------------------------------------------------------------------------------------------------------|----|
|      |               | Depth (m)                   | Type | Results |           |           |        |                                                                                                                                   |    |
|      |               | 12.00                       | ES   |         | 12.00     |           |        |                                                                                                                                   | 11 |
|      |               | 14.00                       | ES   |         | 14.00     |           |        | Brown gravely silty fine to coarse SAND. Gravel is angular to subangular fine to coarse of mixed lithologies including quartzite. | 12 |
|      |               |                             |      |         |           |           |        | Firm brown gravely silty CLAY. Gravel is angular to subangular fine to medium of mixed lithologies including quartzite.           | 14 |
|      |               |                             |      |         |           |           |        |                                                                                                                                   | 15 |
|      |               |                             |      |         |           |           |        |                                                                                                                                   | 16 |
|      |               |                             |      |         |           |           |        |                                                                                                                                   | 17 |
|      |               |                             |      |         |           |           |        |                                                                                                                                   | 18 |
|      |               |                             |      |         |           |           |        |                                                                                                                                   | 19 |
|      |               |                             |      |         |           |           |        |                                                                                                                                   | 20 |

Continued on next sheet

## Remarks

1. Location cleared of services using Utility Clearance. 2. Concrete cored to 0.16m bgl. 3. Cable percussive taken to 20.50m bgl 4. Rotary open holing taken to 45.00m bgl 5. Groundwater was encountered at 23.00m. 6. Groundwater monitoring standpipe installed to 26.00m (20m plain, 6m slotted).





## Borehole No.

**BH02**

Sheet 3 of 5

Project Name: EVONIK

|             |           |
|-------------|-----------|
| Project No. | GRO-20221 |
|-------------|-----------|

Co-ords: -

| Hole Type |
|-----------|
| CP        |

Location: CLAYTON

Level:

Scale  
1:50

Client: EVONIK CHEMICALS LTD

Dates: 20/02/2023 - 23/02/2023

Logged By  
EW

[illegible]

Continued on next sheet

|         |
|---------|
| Remarks |
|---------|

1. Location cleared of services using Utility Clearance. 2. Concrete cored to 0.16m bgl. 3. Cable percussive taken to 20.50m bgl 4. Rotary open holing taken to 45.00m bgl 5. Groundwater was encountered at 23.00m. 6. Groundwater monitoring standpipe installed to 26.00m (20m plain, 6m slotted).









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# Borehole Log

Borehole No.

**BH03**

Sheet 1 of 5

Project Name: EVONIK

Project No.  
GRO-20221

Co-ords: -

Hole Type  
CP

Location: CLAYTON

Level:

Scale  
1:50

Client: EVONIK CHEMICALS LTD

Dates: 21/02/2023 - 22/02/2023

Logged By  
EW

| Well | Water Strikes | Samples and In Situ Testing |      |         | Depth (m) | Level (m) | Legend | Stratum Description                                                                                                                                           |    |
|------|---------------|-----------------------------|------|---------|-----------|-----------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
|      |               | Depth (m)                   | Type | Results |           |           |        |                                                                                                                                                               |    |
| 1    |               |                             |      |         | 0.23      |           |        | MADE GROUND. Concrete.                                                                                                                                        |    |
|      |               | 0.50                        | ES   |         | 0.50      |           |        | MADE GROUND. Brown sandy subangular to subrounded fine to coarse gravel of mixed lithologies including brick. Sand is fine to coarse.                         | 1  |
|      |               | 1.00                        | ES   |         |           |           |        | Soft grey gravely slightly silty sandy CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to medium of mixed lithologies including quartzite. | 2  |
|      |               | 2.00                        | ES   |         |           |           |        |                                                                                                                                                               | 3  |
|      |               | 3.00                        | ES   |         |           |           |        |                                                                                                                                                               | 4  |
|      |               | 4.00                        | ES   |         |           |           |        |                                                                                                                                                               | 5  |
|      |               | 5.00                        | ES   |         |           |           |        |                                                                                                                                                               | 6  |
|      |               | 6.00                        | ES   |         |           |           |        |                                                                                                                                                               | 7  |
|      |               | 7.00                        | ES   |         |           |           |        |                                                                                                                                                               | 8  |
|      |               | 8.00                        | ES   |         |           |           |        |                                                                                                                                                               | 9  |
|      |               | 9.00                        | ES   |         |           |           |        |                                                                                                                                                               | 10 |
|      |               | 10.00                       | ES   |         |           |           |        | Continued on next sheet                                                                                                                                       |    |

## Remarks

1. Location cleared of services using Utility Clearance. 2. Concrete cored to 0.23m bgl. 3. Cable percussive taken to 20.00m bgl 4. Rotary open holing taken to 50.00m bgl 5. Groundwater was encountered at 24.50m. 6. Groundwater monitoring standpipe installed to 26.00m (20m plain, 6m slotted).





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# Borehole Log

Borehole No.

**BH03**

Sheet 2 of 5

Project Name: EVONIK

Project No.  
GRO-20221

Co-ords: -

Hole Type  
CP

Location: CLAYTON

Level:

Scale  
1:50

Client: EVONIK CHEMICALS LTD

Dates: 21/02/2023 - 22/02/2023

Logged By  
EW

| Well | Water Strikes | Samples and In Situ Testing |      |         | Depth (m) | Level (m) | Legend | Stratum Description                                                                                                                                   |    |
|------|---------------|-----------------------------|------|---------|-----------|-----------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------|----|
|      |               | Depth (m)                   | Type | Results |           |           |        |                                                                                                                                                       |    |
|      |               | 11.00                       | ES   |         | 11.00     |           |        | Soft brown gravelly very sandy CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of mixed lithologies including quartzite. | 11 |
|      |               |                             |      |         |           |           |        |                                                                                                                                                       | 12 |
|      |               | 13.00                       | ES   |         | 13.00     |           |        | Firm brown very silty CLAY.                                                                                                                           | 13 |
|      |               |                             |      |         |           |           |        |                                                                                                                                                       | 14 |
|      |               | 15.00                       | ES   |         |           |           |        |                                                                                                                                                       | 15 |
|      |               |                             |      |         |           |           |        |                                                                                                                                                       | 16 |
|      |               | 18.00                       | ES   |         |           |           |        |                                                                                                                                                       | 17 |
|      |               |                             |      |         |           |           |        |                                                                                                                                                       | 18 |
|      |               | 20.00                       | ES   |         | 20.00     |           |        |                                                                                                                                                       | 19 |
|      |               |                             |      |         |           |           |        |                                                                                                                                                       | 20 |

Continued on next sheet

## Remarks

1. Location cleared of services using Utility Clearance. 2. Concrete cored to 0.23m bgl. 3. Cable percussive taken to 20.00m bgl 4. Rotary open holing taken to 50.00m bgl 5. Groundwater was encountered at 24.50m. 6. Groundwater monitoring standpipe installed to 26.00m (20m plain, 6m slotted).





GROUNDTECH  
CONSULTING

# Borehole Log

Borehole No.

**BH03**

Sheet 3 of 5

Project Name: EVONIK

Project No.  
GRO-20221

Co-ords: -

Hole Type  
CP

Location: CLAYTON

Level:

Scale  
1:50

Client: EVONIK CHEMICALS LTD

Dates: 21/02/2023 - 22/02/2023

Logged By  
EW

| Well | Water Strikes | Samples and In Situ Testing |      |         | Depth (m) | Level (m) | Legend | Stratum Description |    |
|------|---------------|-----------------------------|------|---------|-----------|-----------|--------|---------------------|----|
|      |               | Depth (m)                   | Type | Results |           |           |        |                     |    |
|      |               |                             |      |         |           |           |        | Red MUDSTONE.       |    |
|      |               |                             |      |         |           |           |        |                     | 21 |
|      |               |                             |      |         |           |           |        |                     | 22 |
|      |               |                             |      |         |           |           |        |                     | 23 |
|      |               |                             |      |         |           |           |        |                     | 24 |
|      |               |                             |      |         |           |           |        |                     | 25 |
|      |               |                             |      |         |           |           |        |                     | 26 |
|      |               |                             |      |         |           |           |        |                     | 27 |
|      |               |                             |      |         |           |           |        |                     | 28 |
|      |               |                             |      |         |           |           |        |                     | 29 |
|      |               |                             |      |         |           |           |        |                     | 30 |

Continued on next sheet

## Remarks

1. Location cleared of services using Utility Clearance. 2. Concrete cored to 0.23m bgl. 3. Cable percussive taken to 20.00m bgl 4. Rotary open holing taken to 50.00m bgl 5. Groundwater was encountered at 24.50m. 6. Groundwater monitoring standpipe installed to 26.00m (20m plain, 6m slotted).





# BH03

Sheet 4 of 5

Project Name: EVONIK

Project No.  
GRO-20221

Co-ords: -

Hole Type  
CP

Location: CLAYTON

Level:

Scale  
1:50

Client: EVONIK CHEMICALS LTD

Dates: 21/02/2023 - 22/02/2023

Logged By  
EW

| Well | Water Strikes | Samples and In Situ Testing |      |         | Depth (m) | Level (m) | Legend | Stratum Description |                         |  |  |  |  |  |  |  |  |
|------|---------------|-----------------------------|------|---------|-----------|-----------|--------|---------------------|-------------------------|--|--|--|--|--|--|--|--|
|      |               | Depth (m)                   | Type | Results |           |           |        |                     |                         |  |  |  |  |  |  |  |  |
|      |               |                             |      |         |           |           |        |                     | 31                      |  |  |  |  |  |  |  |  |
|      |               |                             |      |         |           |           |        |                     | 32                      |  |  |  |  |  |  |  |  |
|      |               |                             |      |         |           |           |        |                     | 33                      |  |  |  |  |  |  |  |  |
|      |               |                             |      |         |           |           |        |                     | 34                      |  |  |  |  |  |  |  |  |
|      |               |                             |      |         |           |           |        |                     | 35                      |  |  |  |  |  |  |  |  |
|      |               |                             |      |         |           |           |        |                     | 36                      |  |  |  |  |  |  |  |  |
|      |               |                             |      |         |           |           |        |                     | 37                      |  |  |  |  |  |  |  |  |
|      |               |                             |      |         |           |           |        |                     | 38                      |  |  |  |  |  |  |  |  |
|      |               |                             |      |         |           |           |        |                     | 39                      |  |  |  |  |  |  |  |  |
|      |               |                             |      |         |           |           |        |                     | 40                      |  |  |  |  |  |  |  |  |
|      |               |                             |      |         |           |           |        |                     | Continued on next sheet |  |  |  |  |  |  |  |  |

Continued on next sheet

|         |
|---------|
| Remarks |
|---------|

1. Location cleared of services using Utility Clearance. 2. Concrete cored to 0.23m bgl. 3. Cable percussive taken to 20.00m bgl 4. Rotary open holing taken to 50.00m bgl 5. Groundwater was encountered at 24.50m. 6. Groundwater monitoring standpipe installed to 26.00m (20m plain, 6m slotted).





## Borehole No.

Sheet 5 of 5

Co-ords: -

Level:

Dates: 21/02/2023 - 22/02/2023

Logged By  
EW

| Well | Water Strikes | Samples and In Situ Testing |      |         | Depth (m) | Level (m) | Legend    | Stratum Description        |    |
|------|---------------|-----------------------------|------|---------|-----------|-----------|-----------|----------------------------|----|
|      |               | Depth (m)                   | Type | Results |           |           |           |                            |    |
|      |               |                             |      |         |           |           |           |                            | 41 |
|      |               |                             |      |         |           |           |           |                            | 42 |
|      |               |                             |      |         |           |           |           |                            | 43 |
|      |               |                             |      |         |           |           |           |                            | 44 |
|      |               |                             |      |         |           |           |           |                            | 45 |
|      |               |                             |      |         |           |           |           |                            | 46 |
|      |               |                             |      |         |           |           |           |                            | 47 |
|      |               |                             |      |         |           |           |           |                            | 48 |
|      |               |                             |      |         |           |           |           |                            | 49 |
|      |               |                             |      |         |           |           |           |                            | 50 |
|      |               |                             |      |         |           |           |           |                            | 51 |
|      |               |                             |      |         |           |           |           |                            | 52 |
|      |               |                             |      |         |           |           |           |                            | 53 |
|      |               |                             |      |         |           |           |           |                            | 54 |
|      |               |                             |      |         |           |           |           |                            | 55 |
|      |               |                             |      |         |           |           |           |                            | 56 |
|      |               |                             |      |         |           |           |           |                            | 57 |
|      |               |                             |      |         |           |           |           |                            | 58 |
|      |               |                             |      |         |           |           |           |                            | 59 |
|      |               |                             |      |         |           |           |           |                            | 60 |
|      |               |                             |      |         |           |           |           | Red SANDSTONE.             | 49 |
|      |               |                             |      |         |           |           |           |                            | 50 |
|      |               |                             |      |         |           |           | - - - - - | End of borehole at 50.00 m | 50 |

1. Location cleared of services using Utility Clearance. 2. Concrete cored to 0.23m bgl. 3. Cable percussive taken to 20.00m bgl 4. Rotary open holing taken to 50.00m bgl 5. Groundwater was encountered at 24.50m. 6. Groundwater monitoring standpipe installed to 26.00m (20m plain, 6m slotted).



## APPENDIX 4 - Geo-Environmental Testing Results (Soils)

Groundtech Consulting Limited  
PO Box 499  
Manchester  
M28 8EE



**Attention :** Jacob Roby  
**Date :** 14th March, 2023  
**Your reference :** 20221  
**Our reference :** Test Report 23/3266 Batch 1  
**Location :** Evonik, Clayton Lane  
**Date samples received :** 2nd March, 2023  
**Status :** Final Report  
**Issue :** 1

Twenty seven samples were received for analysis on 2nd March, 2023 of which six were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

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

**Authorised By:**



**Liza Klebe**

Project Co-ordinator

Please include all sections of this report if it is reproduced

## Element Materials Technology

**Client Name:** Groundtech Consulting Limited  
**Reference:** 20221  
**Location:** Evonik, Clayton Lane  
**Contact:** Jacob Roby  
**EMT Job No:** 23/3266

**Report : Solid**

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

| EMT Sample No.                                             | 1-2                 | 14-15      | 22-23      | 25                 | 38-39      | 44-45              |  |  |  |  | Please see attached notes for all abbreviations and acronyms |       |                        |
|------------------------------------------------------------|---------------------|------------|------------|--------------------|------------|--------------------|--|--|--|--|--------------------------------------------------------------|-------|------------------------|
| Sample ID                                                  | BH1                 | BH1        | BH1        | BH02               | BH02       | BH02               |  |  |  |  |                                                              |       |                        |
| Depth                                                      | 0.50                | 7.00       | 21.5       | 0.50               | 9.00       | 14.0               |  |  |  |  |                                                              |       |                        |
| COC No / misc                                              |                     |            |            |                    |            |                    |  |  |  |  |                                                              |       |                        |
| Containers                                                 | V J                 | V J        | V J        | J                  | V J        | V J                |  |  |  |  |                                                              |       |                        |
| Sample Date                                                | 15/02/2023          | 15/02/2023 | 16/02/2023 | 20/02/2023         | 20/02/2023 | 20/02/2023         |  |  |  |  |                                                              |       |                        |
| Sample Type                                                | Soil                | Soil       | Soil       | Soil               | Soil       | Soil               |  |  |  |  |                                                              |       |                        |
| Batch Number                                               | 1                   | 1          | 1          | 1                  | 1          | 1                  |  |  |  |  |                                                              |       |                        |
| Date of Receipt                                            | 02/03/2023          | 02/03/2023 | 02/03/2023 | 02/03/2023         | 02/03/2023 | 02/03/2023         |  |  |  |  | LOD/LOR                                                      | Units | Method No.             |
| Arsenic #                                                  | 485.2 <sup>AA</sup> | 3.5        | 4.7        | 15.5               | 4.3        | 5.6                |  |  |  |  | <0.5                                                         | mg/kg | TM30/PM15              |
| Cadmium #                                                  | <0.1                | <0.1       | <0.1       | 1.8                | <0.1       | <0.1               |  |  |  |  | <0.1                                                         | mg/kg | TM30/PM15              |
| Chromium #                                                 | 240.4               | 84.3       | 58.1       | 114.8              | 98.9       | 58.4               |  |  |  |  | <0.5                                                         | mg/kg | TM30/PM15              |
| Copper #                                                   | 147                 | 12         | 7          | 38                 | 11         | 20                 |  |  |  |  | <1                                                           | mg/kg | TM30/PM15              |
| Lead #                                                     | 6530 <sup>AA</sup>  | 7          | 9          | 2029               | 12         | 8                  |  |  |  |  | <5                                                           | mg/kg | TM30/PM15              |
| Mercury #                                                  | 0.4                 | <0.1       | <0.1       | 0.3                | <0.1       | <0.1               |  |  |  |  | <0.1                                                         | mg/kg | TM30/PM15              |
| Nickel #                                                   | 50.8                | 10.2       | 22.2       | 27.9               | 11.5       | 28.6               |  |  |  |  | <0.7                                                         | mg/kg | TM30/PM15              |
| Selenium #                                                 | 2                   | <1         | 2          | <1                 | <1         | 1                  |  |  |  |  | <1                                                           | mg/kg | TM30/PM15              |
| Zinc #                                                     | 199                 | 26         | 32         | 215                | 25         | 49                 |  |  |  |  | <5                                                           | mg/kg | TM30/PM15              |
| Methyl Tertiary Butyl Ether #                              | <2                  | <2         | <2         | <2                 | <2         | <2                 |  |  |  |  | <2                                                           | ug/kg | TM15/PM10              |
| Benzene #                                                  | <3                  | <3         | <3         | <3                 | <3         | <3                 |  |  |  |  | <3                                                           | ug/kg | TM15/PM10              |
| Toluene #                                                  | 10                  | <3         | <3         | 4                  | <3         | <3                 |  |  |  |  | <3                                                           | ug/kg | TM15/PM10              |
| Ethylbenzene #                                             | 9                   | <3         | <3         | <3                 | <3         | <3                 |  |  |  |  | <3                                                           | ug/kg | TM15/PM10              |
| m/p-Xylene #                                               | 24                  | <5         | <5         | 6                  | <5         | <5                 |  |  |  |  | <5                                                           | ug/kg | TM15/PM10              |
| o-Xylene #                                                 | 13                  | <3         | <3         | <3                 | <3         | <3                 |  |  |  |  | <3                                                           | ug/kg | TM15/PM10              |
| Surrogate Recovery Toluene D8                              | 69                  | 84         | 83         | 76                 | 82         | 99                 |  |  |  |  | <0                                                           | %     | TM15/PM10              |
| Surrogate Recovery 4-Bromofluorobenzene                    | 58                  | 80         | 85         | 50                 | 66         | 71                 |  |  |  |  | <0                                                           | %     | TM15/PM10              |
| TPH CWG                                                    |                     |            |            |                    |            |                    |  |  |  |  |                                                              |       |                        |
| <b>Aliphatics</b>                                          |                     |            |            |                    |            |                    |  |  |  |  |                                                              |       |                        |
| >C5-C6 (HS_1D_AL) #                                        | <0.1 <sup>SV</sup>  | <0.1       | <0.1       | <0.1 <sup>SV</sup> | <0.1       | <0.1 <sup>SV</sup> |  |  |  |  | <0.1                                                         | mg/kg | TM36/PM12              |
| >C6-C8 (HS_1D_AL) #                                        | <0.1 <sup>SV</sup>  | <0.1       | <0.1       | <0.1 <sup>SV</sup> | <0.1       | <0.1 <sup>SV</sup> |  |  |  |  | <0.1                                                         | mg/kg | TM36/PM12              |
| >C8-C10 (HS_1D_AL)                                         | <0.1 <sup>SV</sup>  | <0.1       | <0.1       | <0.1 <sup>SV</sup> | <0.1       | <0.1 <sup>SV</sup> |  |  |  |  | <0.1                                                         | mg/kg | TM36/PM12              |
| >C10-C12 (EH_CU_1D_AL) #                                   | <0.2                | <0.2       | <0.2       | <0.2               | <0.2       | <0.2               |  |  |  |  | <0.2                                                         | mg/kg | TM5/PM8/PM16           |
| >C12-C16 (EH_CU_1D_AL) #                                   | 18                  | <4         | <4         | <4                 | <4         | <4                 |  |  |  |  | <4                                                           | mg/kg | TM5/PM8/PM16           |
| >C16-C21 (EH_CU_1D_AL) #                                   | 313                 | <7         | <7         | 16                 | <7         | <7                 |  |  |  |  | <7                                                           | mg/kg | TM5/PM8/PM16           |
| >C21-C35 (EH_CU_1D_AL) #                                   | 415                 | <7         | <7         | 152                | <7         | <7                 |  |  |  |  | <7                                                           | mg/kg | TM5/PM8/PM16           |
| Total aliphatics C5-35 (EH+HS_CU_1D_AL)                    | 746                 | <19        | <19        | 168                | <19        | <19                |  |  |  |  | <19                                                          | mg/kg | TM5/PM8/PM16/PM12/PM15 |
| <b>Aromatics</b>                                           |                     |            |            |                    |            |                    |  |  |  |  |                                                              |       |                        |
| >C5-EC7 (HS_1D_AR) #                                       | <0.1 <sup>SV</sup>  | <0.1       | <0.1       | <0.1 <sup>SV</sup> | <0.1       | <0.1 <sup>SV</sup> |  |  |  |  | <0.1                                                         | mg/kg | TM36/PM12              |
| >EC7-EC8 (HS_1D_AR) #                                      | <0.1 <sup>SV</sup>  | <0.1       | <0.1       | <0.1 <sup>SV</sup> | <0.1       | <0.1 <sup>SV</sup> |  |  |  |  | <0.1                                                         | mg/kg | TM36/PM12              |
| >EC8-EC10 (HS_1D_AR) #                                     | <0.1 <sup>SV</sup>  | <0.1       | <0.1       | <0.1 <sup>SV</sup> | <0.1       | <0.1 <sup>SV</sup> |  |  |  |  | <0.1                                                         | mg/kg | TM36/PM12              |
| >EC10-EC12 (EH_CU_1D_AR) #                                 | 4.6                 | <0.2       | <0.2       | <0.2               | <0.2       | <0.2               |  |  |  |  | <0.2                                                         | mg/kg | TM5/PM8/PM16           |
| >EC12-EC16 (EH_CU_1D_AR) #                                 | 39                  | <4         | <4         | <4                 | <4         | <4                 |  |  |  |  | <4                                                           | mg/kg | TM5/PM8/PM16           |
| >EC16-EC21 (EH_CU_1D_AR) #                                 | 981                 | <7         | <7         | <7                 | <7         | <7                 |  |  |  |  | <7                                                           | mg/kg | TM5/PM8/PM16           |
| >EC21-EC35 (EH_CU_1D_AR) #                                 | 990                 | <7         | <7         | 54                 | <7         | <7                 |  |  |  |  | <7                                                           | mg/kg | TM5/PM8/PM16           |
| Total aromatics C5-35 (EH+HS_CU_1D_AR) #                   | 2015                | <19        | <19        | 54                 | <19        | <19                |  |  |  |  | <19                                                          | mg/kg | TM5/PM8/PM16/PM12/PM15 |
| Total aliphatics and aromatics (C5-35) (EH+HS_CU_1D_Total) | 2761                | <38        | <38        | 222                | <38        | <38                |  |  |  |  | <38                                                          | mg/kg | TM5/PM8/PM16/PM12/PM15 |
| Natural Moisture Content                                   | 21.6                | 28.9       | 11.1       | 11.0               | 18.3       | 13.9               |  |  |  |  | <0.1                                                         | %     | PM4/PM0                |
| Hexavalent Chromium #                                      | <0.3                | <0.3       | <0.3       | 45.0               | <0.3       | <0.3               |  |  |  |  | <0.3                                                         | mg/kg | TM38/PM20              |

## Element Materials Technology

**Client Name:** Groundtech Consulting Limited  
**Reference:** 20221  
**Location:** Evonik, Clayton Lane  
**Contact:** Jacob Roby  
**EMT Job No:** 23/3266

Report : Solid

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

[illegible]

# Element Materials Technology

**Client Name:** Groundtech Consulting Limited  
**Reference:** 20221  
**Location:** Evonik, Clayton Lane  
**Contact:** Jacob Roby  
**EMT Job No:** 23/3266

**SVOC Report :** Solid

| EMT Sample No.              | 1-2        | 14-15      | 22-23      | 25         | 38-39      | 44-45      |  |  |  |  | Please see attached notes for all abbreviations and acronyms |       |            |
|-----------------------------|------------|------------|------------|------------|------------|------------|--|--|--|--|--------------------------------------------------------------|-------|------------|
| Sample ID                   | BH1        | BH1        | BH1        | BH02       | BH02       | BH02       |  |  |  |  |                                                              |       |            |
| Depth                       | 0.50       | 7.00       | 21.5       | 0.50       | 9.00       | 14.0       |  |  |  |  |                                                              |       |            |
| COC No / misc               |            |            |            |            |            |            |  |  |  |  |                                                              |       |            |
| Containers                  | V J        | V J        | V J        | J          | V J        | V J        |  |  |  |  |                                                              |       |            |
| Sample Date                 | 15/02/2023 | 15/02/2023 | 16/02/2023 | 20/02/2023 | 20/02/2023 | 20/02/2023 |  |  |  |  |                                                              |       |            |
| Sample Type                 | Soil       | Soil       | Soil       | Soil       | Soil       | Soil       |  |  |  |  |                                                              |       |            |
| Batch Number                | 1          | 1          | 1          | 1          | 1          | 1          |  |  |  |  | LOD/LOR                                                      | Units | Method No. |
| Date of Receipt             | 02/03/2023 | 02/03/2023 | 02/03/2023 | 02/03/2023 | 02/03/2023 | 02/03/2023 |  |  |  |  |                                                              |       |            |
| SVOC MS                     |            |            |            |            |            |            |  |  |  |  |                                                              |       |            |
| <b>Phenols</b>              |            |            |            |            |            |            |  |  |  |  |                                                              |       |            |
| 2-Chlorophenol #            | <10        | <10        | <10        | <10        | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| 2-Methylphenol              | <10        | <10        | <10        | <10        | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| 2-Nitrophenol               | <10        | <10        | <10        | <10        | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| 2,4-Dichlorophenol #        | <10        | <10        | <10        | <10        | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| 2,4-Dimethylphenol          | <10        | <10        | <10        | <10        | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| 2,4,5-Trichlorophenol       | <10        | <10        | <10        | <10        | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| 2,4,6-Trichlorophenol       | <10        | <10        | <10        | <10        | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| 4-Chloro-3-methylphenol     | <10        | <10        | <10        | <10        | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| 4-Methylphenol              | <10        | <10        | <10        | <10        | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| 4-Nitrophenol               | <10        | <10        | <10        | <10        | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Pentachlorophenol           | <10        | <10        | <10        | <10        | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Phenol #                    | <10        | <10        | <10        | <10        | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| <b>PAHs</b>                 |            |            |            |            |            |            |  |  |  |  |                                                              |       |            |
| 2-Chloronaphthalene #       | <10        | <10        | <10        | <10        | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| 2-Methylnaphthalene #       | 514        | <10        | <10        | 75         | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Naphthalene                 | 457        | <10        | <10        | 111        | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Acenaphthylene              | 61         | <10        | <10        | 51         | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Acenaphthene                | 360        | <10        | <10        | 74         | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Fluorene                    | 426        | <10        | <10        | 56         | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Phenanthrene #              | 3227       | <10        | <10        | 975        | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Anthracene                  | 855        | <10        | <10        | 206        | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Fluoranthene #              | 5018       | <10        | <10        | 1376       | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Pyrene #                    | 4813       | <10        | <10        | 1333       | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Benzo(a)anthracene          | 2124       | <10        | <10        | 800        | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Chrysene                    | 2160       | <10        | <10        | 804        | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Benzo(bk)fluoranthene       | 3432       | <10        | <10        | 1225       | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Benzo(a)pyrene              | 2402       | <10        | <10        | 798        | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Indeno(123cd)pyrene         | 1094       | <10        | <10        | 431        | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Dibenzo(ah)anthracene       | 399        | <10        | <10        | 144        | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Benzo(ghi)perylene          | 1394       | <10        | <10        | 586        | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Benzo(b)fluoranthene        | 2471       | <10        | <10        | 882        | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Benzo(k)fluoranthene        | 961        | <10        | <10        | 343        | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| <b>Phthalates</b>           |            |            |            |            |            |            |  |  |  |  |                                                              |       |            |
| Bis(2-ethylhexyl) phthalate | <100       | <100       | <100       | <100       | 125        | <100       |  |  |  |  | <100                                                         | ug/kg | TM16/PM8   |
| Butylbenzyl phthalate       | <100       | <100       | <100       | <100       | <100       | <100       |  |  |  |  | <100                                                         | ug/kg | TM16/PM8   |
| Di-n-butyl phthalate        | <100       | <100       | <100       | <100       | <100       | <100       |  |  |  |  | <100                                                         | ug/kg | TM16/PM8   |
| Di-n-Octyl phthalate        | <100       | <100       | <100       | <100       | <100       | <100       |  |  |  |  | <100                                                         | ug/kg | TM16/PM8   |
| Diethyl phthalate           | <100       | <100       | <100       | <100       | <100       | <100       |  |  |  |  | <100                                                         | ug/kg | TM16/PM8   |
| Dimethyl phthalate #        | <100       | <100       | <100       | <100       | <100       | <100       |  |  |  |  | <100                                                         | ug/kg | TM16/PM8   |

# Element Materials Technology

**Client Name:** Groundtech Consulting Limited  
**Reference:** 20221  
**Location:** Evonik, Clayton Lane  
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**EMT Job No:** 23/3266

**SVOC Report :** Solid

| EMT Sample No.                      | 1-2        | 14-15      | 22-23      | 25                | 38-39      | 44-45      |  |  |  |  | Please see attached notes for all abbreviations and acronyms |       |            |
|-------------------------------------|------------|------------|------------|-------------------|------------|------------|--|--|--|--|--------------------------------------------------------------|-------|------------|
| Sample ID                           | BH1        | BH1        | BH1        | BH02              | BH02       | BH02       |  |  |  |  |                                                              |       |            |
| Depth                               | 0.50       | 7.00       | 21.5       | 0.50              | 9.00       | 14.0       |  |  |  |  |                                                              |       |            |
| COC No / misc                       |            |            |            |                   |            |            |  |  |  |  |                                                              |       |            |
| Containers                          | V J        | V J        | V J        | J                 | V J        | V J        |  |  |  |  |                                                              |       |            |
| Sample Date                         | 15/02/2023 | 15/02/2023 | 16/02/2023 | 20/02/2023        | 20/02/2023 | 20/02/2023 |  |  |  |  |                                                              |       |            |
| Sample Type                         | Soil       | Soil       | Soil       | Soil              | Soil       | Soil       |  |  |  |  |                                                              |       |            |
| Batch Number                        | 1          | 1          | 1          | 1                 | 1          | 1          |  |  |  |  | LOD/LOR                                                      | Units | Method No. |
| Date of Receipt                     | 02/03/2023 | 02/03/2023 | 02/03/2023 | 02/03/2023        | 02/03/2023 | 02/03/2023 |  |  |  |  |                                                              |       |            |
| SVOC MS                             |            |            |            |                   |            |            |  |  |  |  |                                                              |       |            |
| Other SVOCs                         |            |            |            |                   |            |            |  |  |  |  |                                                              |       |            |
| 1,2-Dichlorobenzene                 | <10        | <10        | <10        | <10               | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| 1,2,4-Trichlorobenzene #            | <10        | <10        | <10        | <10               | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| 1,3-Dichlorobenzene                 | <10        | <10        | <10        | <10               | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| 1,4-Dichlorobenzene                 | <10        | <10        | <10        | <10               | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| 2-Nitroaniline                      | <10        | <10        | <10        | <10               | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| 2,4-Dinitrotoluene                  | <10        | <10        | <10        | <10               | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| 2,6-Dinitrotoluene                  | <10        | <10        | <10        | <10               | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| 3-Nitroaniline                      | <10        | <10        | <10        | <10               | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| 4-Bromophenylphenylether #          | <10        | <10        | <10        | <10               | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| 4-Chloroaniline                     | <10        | <10        | <10        | <10               | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| 4-Chlorophenylphenylether           | <10        | <10        | <10        | <10               | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| 4-Nitroaniline                      | <10        | <10        | <10        | <10               | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Azobenzene                          | <10        | <10        | <10        | <10               | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Bis(2-chloroethoxy)methane          | <10        | <10        | <10        | <10               | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Bis(2-chloroethyl)ether             | <10        | <10        | <10        | <10               | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Carbazole                           | 257        | <10        | <10        | 69                | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Dibenzofuran #                      | 355        | <10        | <10        | 71                | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Hexachlorobenzene                   | <10        | <10        | <10        | <10               | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Hexachlorobutadiene #               | <10        | <10        | <10        | <10               | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Hexachlorocyclopentadiene           | <10        | <10        | <10        | <10               | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Hexachloroethane                    | <10        | <10        | <10        | <10               | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Isophorone #                        | <10        | <10        | <10        | <10               | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| N-nitrosodi-n-propylamine #         | <10        | <10        | <10        | <10               | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Nitrobenzene #                      | <10        | <10        | <10        | <10               | <10        | <10        |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Surrogate Recovery 2-Fluorobiphenyl | 115        | 111        | 110        | 136 <sup>SV</sup> | 118        | 108        |  |  |  |  | <0                                                           | %     | TM16/PM8   |
| Surrogate Recovery p-Terphenyl-d14  | 130        | 109        | 108        | 147 <sup>SV</sup> | 115        | 103        |  |  |  |  | <0                                                           | %     | TM16/PM8   |

# Element Materials Technology

**Client Name:** Groundtech Consulting Limited  
**Reference:** 20221  
**Location:** Evonik, Clayton Lane  
**Contact:** Jacob Roby  
**EMT Job No:** 23/3266

**VOC Report :** Solid

| EMT Sample No.                          | 1-2        | 14-15      | 22-23      | 25         | 38-39      | 44-45      |  |  |  |  | Please see attached notes for all abbreviations and acronyms |       |             |
|-----------------------------------------|------------|------------|------------|------------|------------|------------|--|--|--|--|--------------------------------------------------------------|-------|-------------|
| Sample ID                               | BH1        | BH1        | BH1        | BH02       | BH02       | BH02       |  |  |  |  |                                                              |       |             |
| Depth                                   | 0.50       | 7.00       | 21.5       | 0.50       | 9.00       | 14.0       |  |  |  |  |                                                              |       |             |
| COC No / misc                           |            |            |            |            |            |            |  |  |  |  |                                                              |       |             |
| Containers                              | V J        | V J        | V J        | J          | V J        | V J        |  |  |  |  |                                                              |       |             |
| Sample Date                             | 15/02/2023 | 15/02/2023 | 16/02/2023 | 20/02/2023 | 20/02/2023 | 20/02/2023 |  |  |  |  |                                                              |       |             |
| Sample Type                             | Soil       | Soil       | Soil       | Soil       | Soil       | Soil       |  |  |  |  |                                                              |       |             |
| Batch Number                            | 1          | 1          | 1          | 1          | 1          | 1          |  |  |  |  | LOD/LOR                                                      | Units | Method No.  |
| Date of Receipt                         | 02/03/2023 | 02/03/2023 | 02/03/2023 | 02/03/2023 | 02/03/2023 | 02/03/2023 |  |  |  |  |                                                              |       |             |
| VOC MS                                  |            |            |            |            |            |            |  |  |  |  |                                                              |       |             |
| Dichlorodifluoromethane                 | <2         | <2         | <2         | <2         | <2         | <2         |  |  |  |  | <2                                                           | ug/kg | TM15/PM10   |
| Methyl Tertiary Butyl Ether #           | <2         | <2         | <2         | <2         | <2         | <2         |  |  |  |  | <2                                                           | ug/kg | TM15/PM10   |
| Chloromethane #                         | 7          | <3         | <3         | <3         | <3         | <3         |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| Vinyl Chloride                          | <2         | <2         | <2         | <2         | <2         | <2         |  |  |  |  | <2                                                           | ug/kg | TM15_A/PM10 |
| Bromomethane                            | <1         | <1         | <1         | <1         | <1         | <1         |  |  |  |  | <1                                                           | ug/kg | TM15/PM10   |
| Chloroethane #                          | <2         | <2         | <2         | <2         | <2         | <2         |  |  |  |  | <2                                                           | ug/kg | TM15/PM10   |
| Trichlorofluoromethane #                | <2         | <2         | <2         | <2         | <2         | <2         |  |  |  |  | <2                                                           | ug/kg | TM15/PM10   |
| 1,1-Dichloroethene (1,1 DCE) #          | <6         | <6         | <6         | <6         | <6         | <6         |  |  |  |  | <6                                                           | ug/kg | TM15/PM10   |
| Dichloromethane (DCM) #                 | <7         | <7         | <7         | 72         | <7         | <7         |  |  |  |  | <7                                                           | ug/kg | TM15/PM10   |
| trans-1-2-Dichloroethene #              | <3         | <3         | <3         | <3         | <3         | <3         |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| 1,1-Dichloroethane #                    | <3         | <3         | <3         | <3         | <3         | <3         |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| cis-1-2-Dichloroethene #                | <3         | <3         | <3         | <3         | <3         | <3         |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| 2,2-Dichloropropane                     | <4         | <4         | <4         | <4         | <4         | <4         |  |  |  |  | <4                                                           | ug/kg | TM15/PM10   |
| Bromochloromethane #                    | <3         | <3         | <3         | <3         | <3         | <3         |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| Chloroform #                            | <3         | <3         | <3         | 4          | <3         | <3         |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| 1,1,1-Trichloroethane #                 | <3         | <3         | <3         | <3         | <3         | <3         |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| 1,1-Dichloropropene #                   | <3         | <3         | <3         | <3         | <3         | <3         |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| Carbon tetrachloride #                  | <4         | <4         | <4         | <4         | <4         | <4         |  |  |  |  | <4                                                           | ug/kg | TM15/PM10   |
| 1,2-Dichloroethane #                    | <4         | <4         | <4         | <4         | <4         | <4         |  |  |  |  | <4                                                           | ug/kg | TM15/PM10   |
| Benzene #                               | <3         | <3         | <3         | <3         | <3         | <3         |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| Trichloroethene (TCE) #                 | <3         | <3         | <3         | <3         | <3         | <3         |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| 1,2-Dichloropropane #                   | <6         | <6         | <6         | <6         | <6         | <6         |  |  |  |  | <6                                                           | ug/kg | TM15/PM10   |
| Dibromomethane #                        | <3         | <3         | <3         | <3         | <3         | <3         |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| Bromodichloromethane #                  | <3         | <3         | <3         | <3         | <3         | <3         |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| cis-1-3-Dichloropropene                 | <4         | <4         | <4         | <4         | <4         | <4         |  |  |  |  | <4                                                           | ug/kg | TM15/PM10   |
| Toluene #                               | 10         | <3         | <3         | 4          | <3         | <3         |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| trans-1-3-Dichloropropene               | <3         | <3         | <3         | <3         | <3         | <3         |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| 1,1,2-Trichloroethane #                 | <3         | <3         | <3         | <3         | <3         | <3         |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| Tetrachloroethene (PCE) #               | <3         | <3         | <3         | 6          | <3         | <3         |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| 1,3-Dichloropropane #                   | <3         | <3         | <3         | <3         | <3         | <3         |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| Dibromochloromethane #                  | <3         | <3         | <3         | <3         | <3         | <3         |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| 1,2-Dibromoethane #                     | <3         | <3         | <3         | <3         | <3         | <3         |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| Chlorobenzene #                         | <3         | <3         | <3         | <3         | <3         | <3         |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| 1,1,1,2-Tetrachloroethane #             | <3         | <3         | <3         | <3         | <3         | <3         |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| Ethylbenzene #                          | 9          | <3         | <3         | <3         | <3         | <3         |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| m/p-Xylene #                            | 24         | <5         | <5         | 6          | <5         | <5         |  |  |  |  | <5                                                           | ug/kg | TM15/PM10   |
| o-Xylene #                              | 13         | <3         | <3         | <3         | <3         | <3         |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| Styrene                                 | <3         | <3         | <3         | <3         | <3         | <3         |  |  |  |  | <3                                                           | ug/kg | TM15_A/PM10 |
| Bromoform                               | <3         | <3         | <3         | <3         | <3         | <3         |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| Isopropylbenzene #                      | <3         | <3         | <3         | <3         | <3         | <3         |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| 1,1,2,2-Tetrachloroethane #             | <3         | <3         | <3         | <3         | <3         | <3         |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| Bromobenzene                            | <2         | <2         | <2         | <2         | <2         | <2         |  |  |  |  | <2                                                           | ug/kg | TM15/PM10   |
| 1,2,3-Trichloropropane #                | <4         | <4         | <4         | <4         | <4         | <4         |  |  |  |  | <4                                                           | ug/kg | TM15/PM10   |
| Propylbenzene #                         | <4         | <4         | <4         | <4         | <4         | <4         |  |  |  |  | <4                                                           | ug/kg | TM15/PM10   |
| 2-Chlorotoluene                         | <3         | <3         | <3         | <3         | <3         | <3         |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| 1,3,5-Trimethylbenzene #                | 9          | <3         | <3         | <3         | <3         | <3         |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| 4-Chlorotoluene                         | <3         | <3         | <3         | <3         | <3         | <3         |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| tert-Butylbenzene #                     | <5         | <5         | <5         | <5         | <5         | <5         |  |  |  |  | <5                                                           | ug/kg | TM15/PM10   |
| 1,2,4-Trimethylbenzene #                | 55         | <6         | <6         | <6         | <6         | <6         |  |  |  |  | <6                                                           | ug/kg | TM15/PM10   |
| sec-Butylbenzene #                      | <4         | <4         | <4         | <4         | <4         | <4         |  |  |  |  | <4                                                           | ug/kg | TM15/PM10   |
| 4-Isopropyltoluene                      | 15         | <4         | <4         | <4         | <4         | <4         |  |  |  |  | <4                                                           | ug/kg | TM15/PM10   |
| 1,3-Dichlorobenzene #                   | <4         | <4         | <4         | <4         | <4         | <4         |  |  |  |  | <4                                                           | ug/kg | TM15/PM10   |
| 1,4-Dichlorobenzene #                   | <4         | <4         | <4         | <4         | <4         | <4         |  |  |  |  | <4                                                           | ug/kg | TM15/PM10   |
| n-Butylbenzene                          | <4         | <4         | <4         | <4         | <4         | <4         |  |  |  |  | <4                                                           | ug/kg | TM15/PM10   |
| 1,2-Dichlorobenzene #                   | <4         | <4         | <4         | <4         | <4         | <4         |  |  |  |  | <4                                                           | ug/kg | TM15/PM10   |
| 1,2-Dibromo-3-chloropropane             | <4         | <4         | <4         | <4         | <4         | <4         |  |  |  |  | <4                                                           | ug/kg | TM15/PM10   |
| 1,2,4-Trichlorobenzene                  | <7         | <7         | <7         | <7         | <7         | <7         |  |  |  |  | <7                                                           | ug/kg | TM15/PM10   |
| Hexachlorobutadiene                     | <4         | <4         | <4         | <4         | <4         | <4         |  |  |  |  | <4                                                           | ug/kg | TM15/PM10   |
| Naphthalene                             | 100        | <27        | <27        | <27        | <27        | <27        |  |  |  |  | <27                                                          | ug/kg | TM15/PM10   |
| 1,2,3-Trichlorobenzene                  | <7         | <7         | <7         | <7         | <7         | <7         |  |  |  |  | <7                                                           | ug/kg | TM15/PM10   |
| Surrogate Recovery Toluene D8           | 69         | 84         | 83         | 76         | 82         | 99         |  |  |  |  | <0                                                           | %     | TM15/PM10   |
| Surrogate Recovery 4-Bromofluorobenzene | 58         | 80         | 85         | 50         | 66         | 71         |  |  |  |  | <0                                                           | %     | TM15/PM10   |

**Element Materials Technology** **Notification of Deviating Samples**

### Notification of Deviating Samples

**Client Name:** Groundtech Consulting Limited **Matrix :** Solid

**Reference:** 20221

**Location:** Evonik, Clayton Lane

**Contact:** Jacob Roby

[illegible]

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.

Only analyses which are accredited are recorded as deviating if set criteria are not met.

# NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 23/3266

## SOILS and ASH

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

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

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

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. Asbestos samples are retained for 6 months.

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

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

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C. Ash samples are dried at 37°C ±5°C.

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

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

## WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

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

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

## STACK EMISSIONS

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

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

## DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

## SURROGATES

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

## DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

## BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

## NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

Laboratory records are kept for a period of no less than 6 years.

## REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

### Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

### Customer Provided Information

Sample ID and depth is information provided by the customer.

## ABBREVIATIONS and ACRONYMS USED

|         |                                                                                                                                                                          |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #       | ISO17025 (UKAS Ref No. 4225) accredited - UK.                                                                                                                            |
| SA      | ISO17025 (SANAS Ref No.T0729) accredited - South Africa                                                                                                                  |
| B       | Indicates analyte found in associated method blank.                                                                                                                      |
| DR      | Dilution required.                                                                                                                                                       |
| M       | MCERTS accredited.                                                                                                                                                       |
| NA      | Not applicable                                                                                                                                                           |
| NAD     | No Asbestos Detected.                                                                                                                                                    |
| ND      | None Detected (usually refers to VOC and/SVOC TICs).                                                                                                                     |
| NDP     | No Determination Possible                                                                                                                                                |
| SS      | Calibrated against a single substance                                                                                                                                    |
| SV      | Surrogate recovery outside performance criteria. This may be due to a matrix effect.                                                                                     |
| W       | Results expressed on as received basis.                                                                                                                                  |
| +       | AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.                                                               |
| >>      | Results above quantitative calibration range. The result should be considered the minimum value and is indicative only. The actual result could be significantly higher. |
| *       | Analysis subcontracted to an Element Materials Technology approved laboratory.                                                                                           |
| AD      | Samples are dried at 35°C ±5°C                                                                                                                                           |
| CO      | Suspected carry over                                                                                                                                                     |
| LOD/LOR | Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS                                                                                                |
| ME      | Matrix Effect                                                                                                                                                            |
| NFD     | No Fibres Detected                                                                                                                                                       |
| BS      | AQC Sample                                                                                                                                                               |
| LB      | Blank Sample                                                                                                                                                             |
| N       | Client Sample                                                                                                                                                            |
| TB      | Trip Blank Sample                                                                                                                                                        |
| OC      | Outside Calibration Range                                                                                                                                                |
| AA      | x5 Dilution                                                                                                                                                              |

## HWOL ACRONYMS AND OPERATORS USED

|       |                                                                      |
|-------|----------------------------------------------------------------------|
| HS    | Headspace Analysis.                                                  |
| EH    | Extractable Hydrocarbons - i.e. everything extracted by the solvent. |
| CU    | Clean-up - e.g. by florisil, silica gel.                             |
| 1D    | GC - Single coil gas chromatography.                                 |
| Total | Aliphatics & Aromatics.                                              |
| AL    | Aliphatics only.                                                     |
| AR    | Aromatics only.                                                      |
| 2D    | GC-GC - Double coil gas chromatography.                              |
| #1    | EH_Total but with humics mathematically subtracted                   |
| #2    | EU_Total but with fatty acids mathematically subtracted              |
| _     | Operator - underscore to separate acronyms (exception for +).        |
| +     | Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total   |
| MS    | Mass Spectrometry.                                                   |

EMT Job No: 23/3266

| Test Method No. | Description                                                                                                                                                                                                                                                                                                                        | Prep Method No. (if appropriate) | Description                                                                                                                                                                                       | ISO 17025 (UKAS/ANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------------------|-------------------------------------------------|------------------------------|
| PM4             | Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.                                                                                                                                                                      | PM0                              | No preparation is required.                                                                                                                                                                       |                       |                        | AR                                              |                              |
| TM5             | Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GC/FID. For waters the solvent extracts dissolved phase plus a sheen if present.                                                                                                                | PM8/PM16                         | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE. | Yes                   |                        | AR                                              | Yes                          |
| TM5/TM36        | please refer to TM5 and TM36 for method details                                                                                                                                                                                                                                                                                    | PM8/PM12/PM16                    | please refer to PM8/PM16 and PM12 for method details                                                                                                                                              |                       |                        | AR                                              | Yes                          |
| TM5/TM36        | please refer to TM5 and TM36 for method details                                                                                                                                                                                                                                                                                    | PM8/PM12/PM16                    | please refer to PM8/PM16 and PM12 for method details                                                                                                                                              | Yes                   |                        | AR                                              | Yes                          |
| TM15            | Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.                                                                                                                                                                                                                  | PM10                             | Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.                                                                                          |                       |                        | AR                                              | Yes                          |
| TM15            | Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.                                                                                                                                                                                                                  | PM10                             | Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.                                                                                          | Yes                   |                        | AR                                              | Yes                          |
| TM16            | Modified USEPA 8270D v5:2014. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.                                                                                                                                                                                                                      | PM8                              | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.                                                                             |                       |                        | AR                                              | Yes                          |
| TM16            | Modified USEPA 8270D v5:2014. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.                                                                                                                                                                                                                      | PM8                              | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.                                                                             | Yes                   |                        | AR                                              | Yes                          |
| TM30            | Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry); WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009; SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996 | PM15                             | Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.                                                     | Yes                   |                        | AD                                              | Yes                          |
| TM36            | Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.   | PM12                             | Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.                                                                                          |                       |                        | AR                                              | Yes                          |

EMT Job No: 23/3266

| Test Method No. | Description                                                                                                                                                                                                                                                                                                                      | Prep Method No. (if appropriate) | Description                                                                                                                                                                                                                                                                                                           | ISO 17025 (UKAS/ANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------------------|-------------------------------------------------|------------------------------|
| TM36            | Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested. | PM12                             | Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.                                                                                                                                                                                                              | Yes                   |                        | AR                                              | Yes                          |
| TM38            | Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013I                           | PM20                             | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | Yes                   |                        | AR                                              | Yes                          |
| TM73            | Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.                                                                                                                                                                                        | PM11                             | Extraction of as received solid samples using one part solid to 2.5 parts deionised water.                                                                                                                                                                                                                            | Yes                   |                        | AR                                              | No                           |
| TM15_A          | Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds, Vinyl Chloride & Styrene by Headspace GC-MS.                                                                                                                                                                                             | PM10                             | Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.                                                                                                                                                                                                              |                       |                        | AR                                              | Yes                          |
|                 |                                                                                                                                                                                                                                                                                                                                  |                                  |                                                                                                                                                                                                                                                                                                                       |                       |                        |                                                 |                              |
|                 |                                                                                                                                                                                                                                                                                                                                  |                                  |                                                                                                                                                                                                                                                                                                                       |                       |                        |                                                 |                              |
|                 |                                                                                                                                                                                                                                                                                                                                  |                                  |                                                                                                                                                                                                                                                                                                                       |                       |                        |                                                 |                              |
|                 |                                                                                                                                                                                                                                                                                                                                  |                                  |                                                                                                                                                                                                                                                                                                                       |                       |                        |                                                 |                              |
|                 |                                                                                                                                                                                                                                                                                                                                  |                                  |                                                                                                                                                                                                                                                                                                                       |                       |                        |                                                 |                              |
|                 |                                                                                                                                                                                                                                                                                                                                  |                                  |                                                                                                                                                                                                                                                                                                                       |                       |                        |                                                 |                              |

Groundtech Consulting Limited  
PO Box 499  
Manchester  
M28 8EE



4225

**Attention :** Jacob Roby  
**Date :** 15th March, 2023  
**Your reference :** 20221  
**Our reference :** Test Report 23/3266 Batch 2  
**Location :** Evonik, Clayton Lane  
**Date samples received :** 4th March, 2023  
**Status :** Final Report  
**Issue :** 1

Thirty one samples were received for analysis on 4th March, 2023 of which three were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

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

**Authorised By:**



**Phil Sommerton BSc**

Senior Project Manager

Please include all sections of this report if it is reproduced

## Element Materials Technology

**Client Name:** Groundtech Consulting Limited  
**Reference:** 20221  
**Location:** Evonik, Clayton Lane  
**Contact:** Jacob Roby  
**EMT Job No:** 23/3266

**Report : Solid**

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

| EMT Sample No.                                             | 64-66              | 72-74      | 105-107    |  |  |  |  |  |  |  | Please see attached notes for all abbreviations and acronyms |       |                        |
|------------------------------------------------------------|--------------------|------------|------------|--|--|--|--|--|--|--|--------------------------------------------------------------|-------|------------------------|
| Sample ID                                                  | BH03               | BH03       | BH03       |  |  |  |  |  |  |  |                                                              |       |                        |
| Depth                                                      | 0.50               | 4.00       | 20.0       |  |  |  |  |  |  |  |                                                              |       |                        |
| COC No / misc                                              |                    |            |            |  |  |  |  |  |  |  |                                                              |       |                        |
| Containers                                                 | V J T              | V J T      | V J T      |  |  |  |  |  |  |  |                                                              |       |                        |
| Sample Date                                                | 22/02/2023         | 22/02/2023 | 22/02/2023 |  |  |  |  |  |  |  |                                                              |       |                        |
| Sample Type                                                | Soil               | Soil       | Soil       |  |  |  |  |  |  |  |                                                              |       |                        |
| Batch Number                                               | 2                  | 2          | 2          |  |  |  |  |  |  |  |                                                              |       |                        |
| Date of Receipt                                            | 04/03/2023         | 04/03/2023 | 04/03/2023 |  |  |  |  |  |  |  | LOD/LOR                                                      | Units | Method No.             |
| Arsenic #                                                  | 4.0                | 8.0        | 9.2        |  |  |  |  |  |  |  | <0.5                                                         | mg/kg | TM30/PM15              |
| Cadmium #                                                  | <0.1               | <0.1       | <0.1       |  |  |  |  |  |  |  | <0.1                                                         | mg/kg | TM30/PM15              |
| Chromium #                                                 | 25.2               | 65.5       | 67.8       |  |  |  |  |  |  |  | <0.5                                                         | mg/kg | TM30/PM15              |
| Copper #                                                   | 103                | 24         | 17         |  |  |  |  |  |  |  | <1                                                           | mg/kg | TM30/PM15              |
| Lead #                                                     | 9                  | 12         | 11         |  |  |  |  |  |  |  | <5                                                           | mg/kg | TM30/PM15              |
| Mercury #                                                  | <0.1               | <0.1       | <0.1       |  |  |  |  |  |  |  | <0.1                                                         | mg/kg | TM30/PM15              |
| Nickel #                                                   | 13.7               | 35.8       | 28.7       |  |  |  |  |  |  |  | <0.7                                                         | mg/kg | TM30/PM15              |
| Selenium #                                                 | 1                  | 3          | 1          |  |  |  |  |  |  |  | <1                                                           | mg/kg | TM30/PM15              |
| Zinc #                                                     | 20                 | 68         | 58         |  |  |  |  |  |  |  | <5                                                           | mg/kg | TM30/PM15              |
| Methyl Tertiary Butyl Ether #                              | <2                 | <2         | <2         |  |  |  |  |  |  |  | <2                                                           | ug/kg | TM15/PM10              |
| Benzene #                                                  | <3                 | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/kg | TM15/PM10              |
| Toluene #                                                  | <3                 | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/kg | TM15/PM10              |
| Ethylbenzene #                                             | <3                 | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/kg | TM15/PM10              |
| m/p-Xylene #                                               | <5                 | <5         | <5         |  |  |  |  |  |  |  | <5                                                           | ug/kg | TM15/PM10              |
| o-Xylene #                                                 | <3                 | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/kg | TM15/PM10              |
| Surrogate Recovery Toluene D8                              | 88                 | 76         | 77         |  |  |  |  |  |  |  | <0                                                           | %     | TM15/PM10              |
| Surrogate Recovery 4-Bromofluorobenzene                    | 53                 | 53         | 57         |  |  |  |  |  |  |  | <0                                                           | %     | TM15/PM10              |
| TPH CWG                                                    |                    |            |            |  |  |  |  |  |  |  |                                                              |       |                        |
| <b>Aliphatics</b>                                          |                    |            |            |  |  |  |  |  |  |  |                                                              |       |                        |
| >C5-C6 (HS_1D_AL) #                                        | <0.1 <sup>SV</sup> | <0.1       | <0.1       |  |  |  |  |  |  |  | <0.1                                                         | mg/kg | TM36/PM12              |
| >C6-C8 (HS_1D_AL) #                                        | <0.1 <sup>SV</sup> | <0.1       | <0.1       |  |  |  |  |  |  |  | <0.1                                                         | mg/kg | TM36/PM12              |
| >C8-C10 (HS_1D_AL)                                         | <0.1 <sup>SV</sup> | <0.1       | <0.1       |  |  |  |  |  |  |  | <0.1                                                         | mg/kg | TM36/PM12              |
| >C10-C12 (EH_CU_1D_AL) #                                   | <0.2               | <0.2       | 7.1        |  |  |  |  |  |  |  | <0.2                                                         | mg/kg | TM5/PM8/PM16           |
| >C12-C16 (EH_CU_1D_AL) #                                   | <4                 | 12         | <4         |  |  |  |  |  |  |  | <4                                                           | mg/kg | TM5/PM8/PM16           |
| >C16-C21 (EH_CU_1D_AL) #                                   | <7                 | 17         | 19         |  |  |  |  |  |  |  | <7                                                           | mg/kg | TM5/PM8/PM16           |
| >C21-C35 (EH_CU_1D_AL) #                                   | <7                 | 16         | 20         |  |  |  |  |  |  |  | <7                                                           | mg/kg | TM5/PM8/PM16           |
| Total aliphatics C5-35 (EH+HS_CU_1D_AL)                    | <19                | 45         | 46         |  |  |  |  |  |  |  | <19                                                          | mg/kg | TM5/PM8/PM16/PM12/PM10 |
| <b>Aromatics</b>                                           |                    |            |            |  |  |  |  |  |  |  |                                                              |       |                        |
| >C5-EC7 (HS_1D_AR) #                                       | <0.1 <sup>SV</sup> | <0.1       | <0.1       |  |  |  |  |  |  |  | <0.1                                                         | mg/kg | TM36/PM12              |
| >EC7-EC8 (HS_1D_AR) #                                      | <0.1 <sup>SV</sup> | <0.1       | <0.1       |  |  |  |  |  |  |  | <0.1                                                         | mg/kg | TM36/PM12              |
| >EC8-EC10 (HS_1D_AR) #                                     | <0.1 <sup>SV</sup> | <0.1       | <0.1       |  |  |  |  |  |  |  | <0.1                                                         | mg/kg | TM36/PM12              |
| >EC10-EC12 (EH_CU_1D_AR) #                                 | <0.2               | <0.2       | <0.2       |  |  |  |  |  |  |  | <0.2                                                         | mg/kg | TM5/PM8/PM16           |
| >EC12-EC16 (EH_CU_1D_AR) #                                 | <4                 | <4         | <4         |  |  |  |  |  |  |  | <4                                                           | mg/kg | TM5/PM8/PM16           |
| >EC16-EC21 (EH_CU_1D_AR) #                                 | <7                 | <7         | <7         |  |  |  |  |  |  |  | <7                                                           | mg/kg | TM5/PM8/PM16           |
| >EC21-EC35 (EH_CU_1D_AR) #                                 | <7                 | <7         | <7         |  |  |  |  |  |  |  | <7                                                           | mg/kg | TM5/PM8/PM16           |
| Total aromatics C5-35 (EH+HS_CU_1D_AR) #                   | <19                | <19        | <19        |  |  |  |  |  |  |  | <19                                                          | mg/kg | TM5/PM8/PM16/PM12/PM10 |
| Total aliphatics and aromatics (C5-35) (EH+HS_CU_1D_Total) | <38                | 45         | 46         |  |  |  |  |  |  |  | <38                                                          | mg/kg | TM5/PM8/PM16/PM12/PM10 |
| Natural Moisture Content                                   | 3.2                | 16.2       | 17.7       |  |  |  |  |  |  |  | <0.1                                                         | %     | PM4/PM0                |
| Hexavalent Chromium #                                      | <0.3               | <0.3       | <0.3       |  |  |  |  |  |  |  | <0.3                                                         | mg/kg | TM38/PM20              |

## Element Materials Technology

**Client Name:** Groundtech Consulting Limited  
**Reference:** 20221  
**Location:** Evonik, Clayton Lane  
**Contact:** Jacob Roby  
**EMT Job No:** 23/3266

Report : Solid

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

[illegible]

# Element Materials Technology

**Client Name:** Groundtech Consulting Limited  
**Reference:** 20221  
**Location:** Evonik, Clayton Lane  
**Contact:** Jacob Roby  
**EMT Job No:** 23/3266

**SVOC Report :** Solid

| EMT Sample No.              | 64-66      | 72-74      | 105-107    |  |  |  |  |  |  |  | Please see attached notes for all abbreviations and acronyms |       |            |
|-----------------------------|------------|------------|------------|--|--|--|--|--|--|--|--------------------------------------------------------------|-------|------------|
| Sample ID                   | BH03       | BH03       | BH03       |  |  |  |  |  |  |  |                                                              |       |            |
| Depth                       | 0.50       | 4.00       | 20.0       |  |  |  |  |  |  |  |                                                              |       |            |
| COC No / misc               |            |            |            |  |  |  |  |  |  |  |                                                              |       |            |
| Containers                  | V J T      | V J T      | V J T      |  |  |  |  |  |  |  |                                                              |       |            |
| Sample Date                 | 22/02/2023 | 22/02/2023 | 22/02/2023 |  |  |  |  |  |  |  |                                                              |       |            |
| Sample Type                 | Soil       | Soil       | Soil       |  |  |  |  |  |  |  |                                                              |       |            |
| Batch Number                | 2          | 2          | 2          |  |  |  |  |  |  |  | LOD/LOR                                                      | Units | Method No. |
| Date of Receipt             | 04/03/2023 | 04/03/2023 | 04/03/2023 |  |  |  |  |  |  |  |                                                              |       |            |
| SVOC MS                     |            |            |            |  |  |  |  |  |  |  |                                                              |       |            |
| Phenols                     |            |            |            |  |  |  |  |  |  |  |                                                              |       |            |
| 2-Chlorophenol #            | <10        | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| 2-Methylphenol              | <10        | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| 2-Nitrophenol               | <10        | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| 2,4-Dichlorophenol #        | <10        | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| 2,4-Dimethylphenol          | <10        | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| 2,4,5-Trichlorophenol       | <10        | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| 2,4,6-Trichlorophenol       | <10        | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| 4-Chloro-3-methylphenol     | <10        | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| 4-Methylphenol              | <10        | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| 4-Nitrophenol               | <10        | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Pentachlorophenol           | <10        | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Phenol #                    | <10        | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| PAHs                        |            |            |            |  |  |  |  |  |  |  |                                                              |       |            |
| 2-Chloronaphthalene #       | <10        | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| 2-Methylnaphthalene #       | <10        | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Naphthalene                 | <10        | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Acenaphthylene              | <10        | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Acenaphthene                | <10        | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Fluorene                    | 10         | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Phenanthrene #              | 150        | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Anthracene                  | 28         | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Fluoranthene #              | 205        | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Pyrene #                    | 198        | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Benzo(a)anthracene          | 143        | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Chrysene                    | 124        | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Benzo(bk)fluoranthene       | 166        | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Benzo(a)pyrene              | 105        | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Indeno(123cd)pyrene         | 54         | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Dibenzo(ah)anthracene       | 20         | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Benzo(ghi)perylene          | 73         | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Benzo(b)fluoranthene        | 120        | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Benzo(k)fluoranthene        | 46         | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/kg | TM16/PM8   |
| Phthalates                  |            |            |            |  |  |  |  |  |  |  |                                                              |       |            |
| Bis(2-ethylhexyl) phthalate | <100       | <100       | <100       |  |  |  |  |  |  |  | <100                                                         | ug/kg | TM16/PM8   |
| Butylbenzyl phthalate       | <100       | <100       | <100       |  |  |  |  |  |  |  | <100                                                         | ug/kg | TM16/PM8   |
| Di-n-butyl phthalate        | <100       | <100       | <100       |  |  |  |  |  |  |  | <100                                                         | ug/kg | TM16/PM8   |
| Di-n-Octyl phthalate        | <100       | <100       | <100       |  |  |  |  |  |  |  | <100                                                         | ug/kg | TM16/PM8   |
| Diethyl phthalate           | <100       | <100       | <100       |  |  |  |  |  |  |  | <100                                                         | ug/kg | TM16/PM8   |
| Dimethyl phthalate #        | <100       | <100       | <100       |  |  |  |  |  |  |  | <100                                                         | ug/kg | TM16/PM8   |

# Element Materials Technology

**Client Name:** Groundtech Consulting Limited  
**Reference:** 20221  
**Location:** Evonik, Clayton Lane  
**Contact:** Jacob Roby  
**EMT Job No:** 23/3266

**SVOC Report :** Solid

| EMT Sample No.                      | 64-66      | 72-74      | 105-107    |  |  |  |  |  |    |  | Please see attached notes for all abbreviations and acronyms |       |            |
|-------------------------------------|------------|------------|------------|--|--|--|--|--|----|--|--------------------------------------------------------------|-------|------------|
| Sample ID                           | BH03       | BH03       | BH03       |  |  |  |  |  |    |  |                                                              |       |            |
| Depth                               | 0.50       | 4.00       | 20.0       |  |  |  |  |  |    |  |                                                              |       |            |
| COC No / misc                       |            |            |            |  |  |  |  |  |    |  |                                                              |       |            |
| Containers                          | V J T      | V J T      | V J T      |  |  |  |  |  |    |  |                                                              |       |            |
| Sample Date                         | 22/02/2023 | 22/02/2023 | 22/02/2023 |  |  |  |  |  |    |  |                                                              |       |            |
| Sample Type                         | Soil       | Soil       | Soil       |  |  |  |  |  |    |  |                                                              |       |            |
| Batch Number                        | 2          | 2          | 2          |  |  |  |  |  |    |  | LOD/LOR                                                      | Units | Method No. |
| Date of Receipt                     | 04/03/2023 | 04/03/2023 | 04/03/2023 |  |  |  |  |  |    |  |                                                              |       |            |
| SVOC MS                             |            |            |            |  |  |  |  |  |    |  |                                                              |       |            |
| Other SVOCs                         |            |            |            |  |  |  |  |  |    |  |                                                              |       |            |
| 1,2-Dichlorobenzene                 | <10        | <10        | <10        |  |  |  |  |  |    |  | <10                                                          | ug/kg | TM16/PM8   |
| 1,2,4-Trichlorobenzene #            | <10        | <10        | <10        |  |  |  |  |  |    |  | <10                                                          | ug/kg | TM16/PM8   |
| 1,3-Dichlorobenzene                 | <10        | <10        | <10        |  |  |  |  |  |    |  | <10                                                          | ug/kg | TM16/PM8   |
| 1,4-Dichlorobenzene                 | <10        | <10        | <10        |  |  |  |  |  |    |  | <10                                                          | ug/kg | TM16/PM8   |
| 2-Nitroaniline                      | <10        | <10        | <10        |  |  |  |  |  |    |  | <10                                                          | ug/kg | TM16/PM8   |
| 2,4-Dinitrotoluene                  | <10        | <10        | <10        |  |  |  |  |  |    |  | <10                                                          | ug/kg | TM16/PM8   |
| 2,6-Dinitrotoluene                  | <10        | <10        | <10        |  |  |  |  |  |    |  | <10                                                          | ug/kg | TM16/PM8   |
| 3-Nitroaniline                      | <10        | <10        | <10        |  |  |  |  |  |    |  | <10                                                          | ug/kg | TM16/PM8   |
| 4-Bromophenylphenylether #          | <10        | <10        | <10        |  |  |  |  |  |    |  | <10                                                          | ug/kg | TM16/PM8   |
| 4-Chloroaniline                     | <10        | <10        | <10        |  |  |  |  |  |    |  | <10                                                          | ug/kg | TM16/PM8   |
| 4-Chlorophenylphenylether           | <10        | <10        | <10        |  |  |  |  |  |    |  | <10                                                          | ug/kg | TM16/PM8   |
| 4-Nitroaniline                      | <10        | <10        | <10        |  |  |  |  |  |    |  | <10                                                          | ug/kg | TM16/PM8   |
| Azobenzene                          | <10        | <10        | <10        |  |  |  |  |  |    |  | <10                                                          | ug/kg | TM16/PM8   |
| Bis(2-chloroethoxy)methane          | <10        | <10        | <10        |  |  |  |  |  |    |  | <10                                                          | ug/kg | TM16/PM8   |
| Bis(2-chloroethyl)ether             | <10        | <10        | <10        |  |  |  |  |  |    |  | <10                                                          | ug/kg | TM16/PM8   |
| Carbazole                           | <10        | <10        | <10        |  |  |  |  |  |    |  | <10                                                          | ug/kg | TM16/PM8   |
| Dibenzofuran #                      | <10        | <10        | <10        |  |  |  |  |  |    |  | <10                                                          | ug/kg | TM16/PM8   |
| Hexachlorobenzene                   | <10        | <10        | <10        |  |  |  |  |  |    |  | <10                                                          | ug/kg | TM16/PM8   |
| Hexachlorobutadiene #               | <10        | <10        | <10        |  |  |  |  |  |    |  | <10                                                          | ug/kg | TM16/PM8   |
| Hexachlorocyclopentadiene           | <10        | <10        | <10        |  |  |  |  |  |    |  | <10                                                          | ug/kg | TM16/PM8   |
| Hexachloroethane                    | <10        | <10        | <10        |  |  |  |  |  |    |  | <10                                                          | ug/kg | TM16/PM8   |
| Isophorone #                        | <10        | <10        | <10        |  |  |  |  |  |    |  | <10                                                          | ug/kg | TM16/PM8   |
| N-nitrosodi-n-propylamine #         | <10        | <10        | <10        |  |  |  |  |  |    |  | <10                                                          | ug/kg | TM16/PM8   |
| Nitrobenzene #                      | <10        | <10        | <10        |  |  |  |  |  |    |  | <10                                                          | ug/kg | TM16/PM8   |
| Surrogate Recovery 2-Fluorobiphenyl | 113        | 117        | 111        |  |  |  |  |  |    |  | <0                                                           | %     | TM16/PM8   |
| Surrogate Recovery p-Terphenyl-d14  | 113        | 114        | 111        |  |  |  |  |  |    |  | <0                                                           | %     | TM16/PM8   |
|                                     |            |            |            |  |  |  |  |  |    |  |                                                              |       |            |
|                                     |            |            |            |  |  |  |  |  |    |  |                                                              |       |            |
|                                     |            |            |            |  |  |  |  |  |    |  |                                                              |       |            |
|                                     |            |            |            |  |  |  |  |  |    |  |                                                              |       |            |
|                                     |            |            |            |  |  |  |  |  |    |  |                                                              |       |            |
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|                                     |            |            |            |  |  |  |  |  |    |  |                                                              |       |            |
|                                     |            |            |            |  |  |  |  |  |    |  |                                                              |       |            |
|                                     |            |            |            |  |  |  |  |  |    |  |                                                              |       |            |
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|                                     |            |            |            |  |  |  |  |  |    |  |                                                              |       |            |
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|                                     |            |            |            |  |  |  |  |  |    |  |                                                              |       |            |
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|                                     |            |            |            |  |  |  |  |  |    |  |                                                              |       |            |
|                                     |            |            |            |  |  |  |  |  |    |  |                                                              |       |            |
|                                     |            |            |            |  |  |  |  |  |    |  |                                                              |       |            |
|                                     |            |            |            |  |  |  |  |  |    |  |                                                              |       |            |
|                                     |            |            |            |  |  |  |  |  |    |  |                                                              |       |            |
|                                     |            |            |            |  |  |  |  |  |    |  |                                                              |       |            |
|                                     |            |            |            |  |  |  |  |  |    |  |                                                              |       |            |
|                                     |            |            |            |  |  |  |  |  |    |  |                                                              |       |            |
|                                     |            |            |            |  |  |  |  |  |    |  |                                                              |       |            |
|                                     |            |            |            |  |  |  |  |  |    |  |                                                              |       |            |
|                                     |            |            |            |  |  |  |  |  |    |  |                                                              |       |            |
|                                     |            |            |            |  |  |  |  |  |    |  |                                                              |       |            |
|                                     |            |            |            |  |  |  |  |  |    |  |                                                              |       |            |
|                                     |            |            |            |  |  |  |  |  |    |  |                                                              |       |            |
|                                     |            |            |            |  |  |  |  |  |    |  |                                                              |       |            |
|                                     |            |            |            |  |  |  |  |  |    |  |                                                              |       |            |
|                                     |            |            |            |  |  |  |  |  |    |  |                                                              |       |            |
|                                     |            |            |            |  |  |  |  |  | </ |  |                                                              |       |            |

# Element Materials Technology

**Client Name:** Groundtech Consulting Limited  
**Reference:** 20221  
**Location:** Evonik, Clayton Lane  
**Contact:** Jacob Roby  
**EMT Job No:** 23/3266

**VOC Report :** Solid

| EMT Sample No.                          | 64-66      | 72-74      | 105-107    |  |  |  |  |  |  |  | Please see attached notes for all abbreviations and acronyms |       |             |
|-----------------------------------------|------------|------------|------------|--|--|--|--|--|--|--|--------------------------------------------------------------|-------|-------------|
| Sample ID                               | BH03       | BH03       | BH03       |  |  |  |  |  |  |  |                                                              |       |             |
| Depth                                   | 0.50       | 4.00       | 20.0       |  |  |  |  |  |  |  |                                                              |       |             |
| COC No / misc                           |            |            |            |  |  |  |  |  |  |  |                                                              |       |             |
| Containers                              | V J T      | V J T      | V J T      |  |  |  |  |  |  |  |                                                              |       |             |
| Sample Date                             | 22/02/2023 | 22/02/2023 | 22/02/2023 |  |  |  |  |  |  |  |                                                              |       |             |
| Sample Type                             | Soil       | Soil       | Soil       |  |  |  |  |  |  |  |                                                              |       |             |
| Batch Number                            | 2          | 2          | 2          |  |  |  |  |  |  |  |                                                              |       |             |
| Date of Receipt                         | 04/03/2023 | 04/03/2023 | 04/03/2023 |  |  |  |  |  |  |  | LOD/LOR                                                      | Units | Method No.  |
| VOC MS                                  |            |            |            |  |  |  |  |  |  |  |                                                              |       |             |
| Dichlorodifluoromethane                 | <2         | <2         | <2         |  |  |  |  |  |  |  | <2                                                           | ug/kg | TM15/PM10   |
| Methyl Tertiary Butyl Ether #           | <2         | <2         | <2         |  |  |  |  |  |  |  | <2                                                           | ug/kg | TM15/PM10   |
| Chloromethane #                         | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| Vinyl Chloride                          | <2         | <2         | <2         |  |  |  |  |  |  |  | <2                                                           | ug/kg | TM15_A/PM10 |
| Bromomethane                            | <1         | <1         | <1         |  |  |  |  |  |  |  | <1                                                           | ug/kg | TM15/PM10   |
| Chloroethane #                          | <2         | <2         | <2         |  |  |  |  |  |  |  | <2                                                           | ug/kg | TM15/PM10   |
| Trichlorofluoromethane #                | <2         | <2         | <2         |  |  |  |  |  |  |  | <2                                                           | ug/kg | TM15/PM10   |
| 1,1-Dichloroethene (1,1 DCE) #          | <6         | <6         | <6         |  |  |  |  |  |  |  | <6                                                           | ug/kg | TM15/PM10   |
| Dichloromethane (DCM) #                 | 15         | 12         | <7         |  |  |  |  |  |  |  | <7                                                           | ug/kg | TM15/PM10   |
| trans-1-2-Dichloroethene #              | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| 1,1-Dichloroethane #                    | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| cis-1-2-Dichloroethene #                | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| 2,2-Dichloropropane                     | <4         | <4         | <4         |  |  |  |  |  |  |  | <4                                                           | ug/kg | TM15/PM10   |
| Bromochloromethane #                    | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| Chloroform #                            | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| 1,1,1-Trichloroethane #                 | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| 1,1-Dichloropropene #                   | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| Carbon tetrachloride #                  | <4         | <4         | <4         |  |  |  |  |  |  |  | <4                                                           | ug/kg | TM15/PM10   |
| 1,2-Dichloroethane #                    | <4         | <4         | <4         |  |  |  |  |  |  |  | <4                                                           | ug/kg | TM15/PM10   |
| Benzene #                               | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| Trichloroethene (TCE) #                 | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| 1,2-Dichloropropane #                   | <6         | <6         | <6         |  |  |  |  |  |  |  | <6                                                           | ug/kg | TM15/PM10   |
| Dibromomethane #                        | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| Bromodichloromethane #                  | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| cis-1-3-Dichloropropene                 | <4         | <4         | <4         |  |  |  |  |  |  |  | <4                                                           | ug/kg | TM15/PM10   |
| Toluene #                               | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| trans-1-3-Dichloropropene               | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| 1,1,2-Trichloroethane #                 | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| Tetrachloroethene (PCE) #               | 61         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| 1,3-Dichloropropane #                   | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| Dibromochloromethane #                  | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| 1,2-Dibromoethane #                     | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| Chlorobenzene #                         | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| 1,1,1,2-Tetrachloroethane #             | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| Ethylbenzene #                          | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| m/p-Xylene #                            | <5         | <5         | <5         |  |  |  |  |  |  |  | <5                                                           | ug/kg | TM15/PM10   |
| o-Xylene #                              | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| Styrene                                 | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/kg | TM15_A/PM10 |
| Bromoform                               | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| Isopropylbenzene #                      | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| 1,1,2,2-Tetrachloroethane #             | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| Bromobenzene                            | <2         | <2         | <2         |  |  |  |  |  |  |  | <2                                                           | ug/kg | TM15/PM10   |
| 1,2,3-Trichloropropane #                | <4         | <4         | <4         |  |  |  |  |  |  |  | <4                                                           | ug/kg | TM15/PM10   |
| Propylbenzene #                         | <4         | <4         | <4         |  |  |  |  |  |  |  | <4                                                           | ug/kg | TM15/PM10   |
| 2-Chlorotoluene                         | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| 1,3,5-Trimethylbenzene #                | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| 4-Chlorotoluene                         | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/kg | TM15/PM10   |
| tert-Butylbenzene #                     | <5         | <5         | <5         |  |  |  |  |  |  |  | <5                                                           | ug/kg | TM15/PM10   |
| 1,2,4-Trimethylbenzene #                | <6         | <6         | <6         |  |  |  |  |  |  |  | <6                                                           | ug/kg | TM15/PM10   |
| sec-Butylbenzene #                      | <4         | <4         | <4         |  |  |  |  |  |  |  | <4                                                           | ug/kg | TM15/PM10   |
| 4-Isopropyltoluene                      | <4         | <4         | <4         |  |  |  |  |  |  |  | <4                                                           | ug/kg | TM15/PM10   |
| 1,3-Dichlorobenzene #                   | <4         | <4         | <4         |  |  |  |  |  |  |  | <4                                                           | ug/kg | TM15/PM10   |
| 1,4-Dichlorobenzene #                   | <4         | <4         | <4         |  |  |  |  |  |  |  | <4                                                           | ug/kg | TM15/PM10   |
| n-Butylbenzene                          | <4         | <4         | <4         |  |  |  |  |  |  |  | <4                                                           | ug/kg | TM15/PM10   |
| 1,2-Dichlorobenzene #                   | <4         | <4         | <4         |  |  |  |  |  |  |  | <4                                                           | ug/kg | TM15/PM10   |
| 1,2-Dibromo-3-chloropropane             | <4         | <4         | <4         |  |  |  |  |  |  |  | <4                                                           | ug/kg | TM15/PM10   |
| 1,2,4-Trichlorobenzene                  | <7         | <7         | <7         |  |  |  |  |  |  |  | <7                                                           | ug/kg | TM15/PM10   |
| Hexachlorobutadiene                     | <4         | <4         | <4         |  |  |  |  |  |  |  | <4                                                           | ug/kg | TM15/PM10   |
| Naphthalene                             | <27        | <27        | <27        |  |  |  |  |  |  |  | <27                                                          | ug/kg | TM15/PM10   |
| 1,2,3-Trichlorobenzene                  | <7         | <7         | <7         |  |  |  |  |  |  |  | <7                                                           | ug/kg | TM15/PM10   |
| Surrogate Recovery Toluene D8           | 88         | 76         | 77         |  |  |  |  |  |  |  | <0                                                           | %     | TM15/PM10   |
| Surrogate Recovery 4-Bromofluorobenzene | 53         | 53         | 57         |  |  |  |  |  |  |  | <0                                                           | %     | TM15/PM10   |

**Client Name:** Groundtech Consulting Limited

**Matrix : Solid**

Reference: 20221

**Location:** Evonik, Clayton Lane

**Contact:** Jacob Roby

[illegible]

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.

Only analyses which are accredited are recorded as deviating if set criteria are not met.

# NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 23/3266

## SOILS and ASH

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

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

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

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. Asbestos samples are retained for 6 months.

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

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

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C. Ash samples are dried at 37°C ±5°C.

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

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

## WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

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

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

## STACK EMISSIONS

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

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

## DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

## SURROGATES

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

## DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

## BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

## NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

Laboratory records are kept for a period of no less than 6 years.

## REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

### Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

### Customer Provided Information

Sample ID and depth is information provided by the customer.

## ABBREVIATIONS and ACRONYMS USED

|         |                                                                                                                                                                          |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #       | ISO17025 (UKAS Ref No. 4225) accredited - UK.                                                                                                                            |
| SA      | ISO17025 (SANAS Ref No.T0729) accredited - South Africa                                                                                                                  |
| B       | Indicates analyte found in associated method blank.                                                                                                                      |
| DR      | Dilution required.                                                                                                                                                       |
| M       | MCERTS accredited.                                                                                                                                                       |
| NA      | Not applicable                                                                                                                                                           |
| NAD     | No Asbestos Detected.                                                                                                                                                    |
| ND      | None Detected (usually refers to VOC and/SVOC TICs).                                                                                                                     |
| NDP     | No Determination Possible                                                                                                                                                |
| SS      | Calibrated against a single substance                                                                                                                                    |
| SV      | Surrogate recovery outside performance criteria. This may be due to a matrix effect.                                                                                     |
| W       | Results expressed on as received basis.                                                                                                                                  |
| +       | AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.                                                               |
| >>      | Results above quantitative calibration range. The result should be considered the minimum value and is indicative only. The actual result could be significantly higher. |
| *       | Analysis subcontracted to an Element Materials Technology approved laboratory.                                                                                           |
| AD      | Samples are dried at 35°C ±5°C                                                                                                                                           |
| CO      | Suspected carry over                                                                                                                                                     |
| LOD/LOR | Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS                                                                                                |
| ME      | Matrix Effect                                                                                                                                                            |
| NFD     | No Fibres Detected                                                                                                                                                       |
| BS      | AQC Sample                                                                                                                                                               |
| LB      | Blank Sample                                                                                                                                                             |
| N       | Client Sample                                                                                                                                                            |
| TB      | Trip Blank Sample                                                                                                                                                        |
| OC      | Outside Calibration Range                                                                                                                                                |

## HWOL ACRONYMS AND OPERATORS USED

|       |                                                                      |
|-------|----------------------------------------------------------------------|
| HS    | Headspace Analysis.                                                  |
| EH    | Extractable Hydrocarbons - i.e. everything extracted by the solvent. |
| CU    | Clean-up - e.g. by florisil, silica gel.                             |
| 1D    | GC - Single coil gas chromatography.                                 |
| Total | Aliphatics & Aromatics.                                              |
| AL    | Aliphatics only.                                                     |
| AR    | Aromatics only.                                                      |
| 2D    | GC-GC - Double coil gas chromatography.                              |
| #1    | EH_Total but with humics mathematically subtracted                   |
| #2    | EU_Total but with fatty acids mathematically subtracted              |
| _     | Operator - underscore to separate acronyms (exception for +).        |
| +     | Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total   |
| MS    | Mass Spectrometry.                                                   |

EMT Job No: 23/3266

| Test Method No. | Description                                                                                                                                                                                                                                                                                                                        | Prep Method No. (if appropriate) | Description                                                                                                                                                                                       | ISO 17025 (UKAS/ANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------------------|-------------------------------------------------|------------------------------|
| PM4             | Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.                                                                                                                                                                      | PM0                              | No preparation is required.                                                                                                                                                                       |                       |                        | AR                                              |                              |
| TM5             | Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GC/FID. For waters the solvent extracts dissolved phase plus a sheen if present.                                                                                                                | PM8/PM16                         | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE. | Yes                   |                        | AR                                              | Yes                          |
| TM5/TM36        | please refer to TM5 and TM36 for method details                                                                                                                                                                                                                                                                                    | PM8/PM12/PM16                    | please refer to PM8/PM16 and PM12 for method details                                                                                                                                              |                       |                        | AR                                              | Yes                          |
| TM5/TM36        | please refer to TM5 and TM36 for method details                                                                                                                                                                                                                                                                                    | PM8/PM12/PM16                    | please refer to PM8/PM16 and PM12 for method details                                                                                                                                              | Yes                   |                        | AR                                              | Yes                          |
| TM15            | Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.                                                                                                                                                                                                                  | PM10                             | Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.                                                                                          |                       |                        | AR                                              | Yes                          |
| TM15            | Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.                                                                                                                                                                                                                  | PM10                             | Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.                                                                                          | Yes                   |                        | AR                                              | Yes                          |
| TM16            | Modified USEPA 8270D v5:2014. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.                                                                                                                                                                                                                      | PM8                              | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.                                                                             |                       |                        | AR                                              | Yes                          |
| TM16            | Modified USEPA 8270D v5:2014. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.                                                                                                                                                                                                                      | PM8                              | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.                                                                             | Yes                   |                        | AR                                              | Yes                          |
| TM30            | Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry); WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009; SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996 | PM15                             | Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.                                                     | Yes                   |                        | AD                                              | Yes                          |
| TM36            | Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.   | PM12                             | Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.                                                                                          |                       |                        | AR                                              | Yes                          |

EMT Job No: 23/3266

| Test Method No. | Description                                                                                                                                                                                                                                                                                                                      | Prep Method No. (if appropriate) | Description                                                                                                                                                                                                                                                                                                           | ISO 17025 (UKAS/S ANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|------------------------|-------------------------------------------------|------------------------------|
| TM36            | Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested. | PM12                             | Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.                                                                                                                                                                                                              | Yes                     |                        | AR                                              | Yes                          |
| TM38            | Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013I                           | PM20                             | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | Yes                     |                        | AR                                              | Yes                          |
| TM73            | Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.                                                                                                                                                                                        | PM11                             | Extraction of as received solid samples using one part solid to 2.5 parts deionised water.                                                                                                                                                                                                                            | Yes                     |                        | AR                                              | No                           |
| TM15_A          | Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds, Vinyl Chloride & Styrene by Headspace GC-MS.                                                                                                                                                                                             | PM10                             | Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.                                                                                                                                                                                                              |                         |                        | AR                                              | Yes                          |
|                 |                                                                                                                                                                                                                                                                                                                                  |                                  |                                                                                                                                                                                                                                                                                                                       |                         |                        |                                                 |                              |
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|                 |                                                                                                                                                                                                                                                                                                                                  |                                  |                                                                                                                                                                                                                                                                                                                       |                         |                        |                                                 |                              |

## APPENDIX 5 - Geo-Environmental Testing Results (Groundwater)

Groundtech Consulting Limited  
PO Box 499  
Manchester  
M28 8EE

**Attention :** Emma Welch  
**Date :** 17th March, 2023  
**Your reference :** GRO-22021  
**Our reference :** Test Report 23/3827 Batch 1  
**Location :** Evoni, Clayton Lane  
**Date samples received :** 10th March, 2023  
**Status :** Final Report  
**Issue :** 1

Three samples were received for analysis on 10th March, 2023 of which three were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

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

**Authorised By:**



**Bruce Leslie**  
Project Manager

Please include all sections of this report if it is reproduced

## Element Materials Technology

**Client Name:** Groundtech Consulting Limited  
**Reference:** GRO-22021  
**Location:** Evoni, Clayton Lane  
**Contact:** Emma Welch  
**EMT Job No:** 23/3827

Report : Liquid

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

| EMT Sample No.                          | 1-5        | 6-10       | 11-15      |    |  |  |  |  |  |  | Please see attached notes for all abbreviations and acronyms |      |           |
|-----------------------------------------|------------|------------|------------|----|--|--|--|--|--|--|--------------------------------------------------------------|------|-----------|
| Sample ID                               | BH01       | BH02       | BH03       |    |  |  |  |  |  |  |                                                              |      |           |
| Depth                                   |            |            |            |    |  |  |  |  |  |  |                                                              |      |           |
| COC No / misc                           |            |            |            |    |  |  |  |  |  |  |                                                              |      |           |
| Containers                              | V HNUF P G | V HNUF P G | V HNUF P G |    |  |  |  |  |  |  |                                                              |      |           |
| Sample Date                             | 10/03/2023 | 10/03/2023 | 10/03/2023 |    |  |  |  |  |  |  |                                                              |      |           |
| Sample Type                             | Liquid     | Liquid     | Liquid     |    |  |  |  |  |  |  |                                                              |      |           |
| Batch Number                            | 1          | 1          | 1          |    |  |  |  |  |  |  |                                                              |      |           |
| Date of Receipt                         | 10/03/2023 | 10/03/2023 | 10/03/2023 |    |  |  |  |  |  |  |                                                              |      |           |
| Dissolved Arsenic                       | 3.6        | 5.4        | 4.0        |    |  |  |  |  |  |  | <2.5                                                         | ug/l | TM30/PM14 |
| Dissolved Boron                         | 114        | 83         | 42         |    |  |  |  |  |  |  | <12                                                          | ug/l | TM30/PM14 |
| Dissolved Cadmium                       | <0.5       | <0.5       | <0.5       |    |  |  |  |  |  |  | <0.5                                                         | ug/l | TM30/PM14 |
| Total Dissolved Chromium                | <1.5       | <1.5       | <1.5       |    |  |  |  |  |  |  | <1.5                                                         | ug/l | TM30/PM14 |
| Dissolved Copper                        | <7         | <7         | <7         |    |  |  |  |  |  |  | <7                                                           | ug/l | TM30/PM14 |
| Dissolved Lead                          | <5         | <5         | <5         |    |  |  |  |  |  |  | <5                                                           | ug/l | TM30/PM14 |
| Dissolved Mercury                       | <1         | <1         | <1         |    |  |  |  |  |  |  | <1                                                           | ug/l | TM30/PM14 |
| Dissolved Nickel                        | <2         | <2         | <2         |    |  |  |  |  |  |  | <2                                                           | ug/l | TM30/PM14 |
| Dissolved Selenium                      | <3         | <3         | <3         |    |  |  |  |  |  |  | <3                                                           | ug/l | TM30/PM14 |
| Dissolved Zinc                          | 3          | 4          | <3         |    |  |  |  |  |  |  | <3                                                           | ug/l | TM30/PM14 |
| PAH MS                                  |            |            |            |    |  |  |  |  |  |  |                                                              |      |           |
| Naphthalene                             | <0.1       | <0.1       | <0.1       |    |  |  |  |  |  |  | <0.1                                                         | ug/l | TM4/PM30  |
| Acenaphthylene                          | 0.030      | <0.005     | 0.010      |    |  |  |  |  |  |  | <0.005                                                       | ug/l | TM4/PM30  |
| Acenaphthene                            | 0.011      | <0.005     | 0.016      |    |  |  |  |  |  |  | <0.005                                                       | ug/l | TM4/PM30  |
| Fluorene                                | 0.013      | <0.005     | 0.020      |    |  |  |  |  |  |  | <0.005                                                       | ug/l | TM4/PM30  |
| Phenanthrene                            | 0.031      | 0.008      | 0.115      |    |  |  |  |  |  |  | <0.005                                                       | ug/l | TM4/PM30  |
| Anthracene                              | 0.008      | <0.005     | 0.017      |    |  |  |  |  |  |  | <0.005                                                       | ug/l | TM4/PM30  |
| Fluoranthene                            | 0.019      | <0.005     | 0.091      |    |  |  |  |  |  |  | <0.005                                                       | ug/l | TM4/PM30  |
| Pyrene                                  | 0.023      | 0.005      | 0.107      |    |  |  |  |  |  |  | <0.005                                                       | ug/l | TM4/PM30  |
| Benzo(a)anthracene                      | 0.007      | <0.005     | 0.034      |    |  |  |  |  |  |  | <0.005                                                       | ug/l | TM4/PM30  |
| Chrysene                                | 0.005      | <0.005     | 0.049      |    |  |  |  |  |  |  | <0.005                                                       | ug/l | TM4/PM30  |
| Benzo(bk)fluoranthene                   | <0.008     | <0.008     | 0.052      |    |  |  |  |  |  |  | <0.008                                                       | ug/l | TM4/PM30  |
| Benzo(a)pyrene                          | <0.005     | <0.005     | 0.019      |    |  |  |  |  |  |  | <0.005                                                       | ug/l | TM4/PM30  |
| Indeno(123cd)pyrene                     | <0.005     | <0.005     | 0.013      |    |  |  |  |  |  |  | <0.005                                                       | ug/l | TM4/PM30  |
| Dibenzo(ah)anthracene                   | <0.005     | <0.005     | <0.005     |    |  |  |  |  |  |  | <0.005                                                       | ug/l | TM4/PM30  |
| Benzo(ghi)perylene                      | <0.005     | <0.005     | 0.014      |    |  |  |  |  |  |  | <0.005                                                       | ug/l | TM4/PM30  |
| PAH 16 Total                            | <0.173     | <0.173     | 0.557      |    |  |  |  |  |  |  | <0.173                                                       | ug/l | TM4/PM30  |
| Benzo(b)fluoranthene                    | <0.008     | <0.008     | 0.037      |    |  |  |  |  |  |  | <0.008                                                       | ug/l | TM4/PM30  |
| Benzo(k)fluoranthene                    | <0.008     | <0.008     | 0.015      |    |  |  |  |  |  |  | <0.008                                                       | ug/l | TM4/PM30  |
| PAH Surrogate % Recovery                | 68         | 83         | 81         |    |  |  |  |  |  |  | <0                                                           | %    | TM4/PM30  |
| Methyl Tertiary Butyl Ether             | <0.1       | <0.1       | <0.1       |    |  |  |  |  |  |  | <0.1                                                         | ug/l | TM15/PM10 |
| Benzene                                 | <0.5       | <0.5       | <0.5       |    |  |  |  |  |  |  | <0.5                                                         | ug/l | TM15/PM10 |
| Toluene                                 | <5         | <5         | <5         |    |  |  |  |  |  |  | <5                                                           | ug/l | TM15/PM10 |
| Ethylbenzene                            | <1         | <1         | <1         |    |  |  |  |  |  |  | <1                                                           | ug/l | TM15/PM10 |
| m/p-Xylene                              | <2         | <2         | <2         |    |  |  |  |  |  |  | <2                                                           | ug/l | TM15/PM10 |
| o-Xylene                                | <1         | <1         | <1         |    |  |  |  |  |  |  | <1                                                           | ug/l | TM15/PM10 |
| Surrogate Recovery Toluene D8           | 134        | 125        | 131        |    |  |  |  |  |  |  | <0                                                           | %    | TM15/PM10 |
| Surrogate Recovery 4-Bromofluorobenzene | 123        | 122        | 120        |    |  |  |  |  |  |  | <0                                                           | %    | TM15/PM10 |
|                                         |            |            |            |    |  |  |  |  |  |  |                                                              |      |           |
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|                                         |            |            |            |    |  |  |  |  |  |  |                                                              |      |           |
|                                         |            |            |            |    |  |  |  |  |  |  |                                                              |      |           |
|                                         |            |            |            |    |  |  |  |  |  |  |                                                              |      |           |
|                                         |            |            |            |    |  |  |  |  |  |  |                                                              |      |           |
|                                         |            |            |            |    |  |  |  |  |  |  |                                                              |      |           |
|                                         |            |            |            |    |  |  |  |  |  |  |                                                              |      |           |
|                                         |            |            |            | </ |  |  |  |  |  |  |                                                              |      |           |

## Element Materials Technology

**Client Name:** Groundtech Consulting Limited  
**Reference:** GRO-22021  
**Location:** Evoni, Clayton Lane  
**Contact:** Emma Welch  
**EMT Job No:** 23/3827

**Report :** Liquid

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

| EMT Sample No.                        | 1-5        | 6-10       | 11-15      |  |  |  |  |  |  |  | Please see attached notes for all abbreviations and acronyms |          |               |
|---------------------------------------|------------|------------|------------|--|--|--|--|--|--|--|--------------------------------------------------------------|----------|---------------|
| Sample ID                             | BH01       | BH02       | BH03       |  |  |  |  |  |  |  |                                                              |          |               |
| Depth                                 |            |            |            |  |  |  |  |  |  |  |                                                              |          |               |
| COC No / misc                         |            |            |            |  |  |  |  |  |  |  |                                                              |          |               |
| Containers                            | V HNUF P G | V HNUF P G | V HNUF P G |  |  |  |  |  |  |  |                                                              |          |               |
| Sample Date                           | 10/03/2023 | 10/03/2023 | 10/03/2023 |  |  |  |  |  |  |  |                                                              |          |               |
| Sample Type                           | Liquid     | Liquid     | Liquid     |  |  |  |  |  |  |  |                                                              |          |               |
| Batch Number                          | 1          | 1          | 1          |  |  |  |  |  |  |  |                                                              |          |               |
| Date of Receipt                       | 10/03/2023 | 10/03/2023 | 10/03/2023 |  |  |  |  |  |  |  | LOD/LOR                                                      | Units    | Method No.    |
| TPH CWG                               |            |            |            |  |  |  |  |  |  |  |                                                              |          |               |
| <b>Aliphatics</b>                     |            |            |            |  |  |  |  |  |  |  |                                                              |          |               |
| >C5-C6                                | <10        | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/l     | TM36/PM12     |
| >C6-C8                                | <10        | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/l     | TM36/PM12     |
| >C8-C10                               | <10        | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/l     | TM36/PM12     |
| >C10-C12                              | <5         | <5         | <5         |  |  |  |  |  |  |  | <5                                                           | ug/l     | TM5/PM16/PM30 |
| >C12-C16                              | <10        | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/l     | TM5/PM16/PM30 |
| >C16-C21                              | <10        | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/l     | TM5/PM16/PM30 |
| >C21-C35                              | <10        | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/l     | TM5/PM16/PM30 |
| Total aliphatics C5-35                | <10        | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/l     | TM5/PM16/PM30 |
| <b>Aromatics</b>                      |            |            |            |  |  |  |  |  |  |  |                                                              |          |               |
| >C5-EC7                               | <10        | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/l     | TM36/PM12     |
| >EC7-EC8                              | <10        | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/l     | TM36/PM12     |
| >EC8-EC10                             | <10        | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/l     | TM36/PM12     |
| >EC10-EC12                            | <5         | <5         | <5         |  |  |  |  |  |  |  | <5                                                           | ug/l     | TM5/PM16/PM30 |
| >EC12-EC16                            | <10        | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/l     | TM5/PM16/PM30 |
| >EC16-EC21                            | <10        | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/l     | TM5/PM16/PM30 |
| >EC21-EC35                            | <10        | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/l     | TM5/PM16/PM30 |
| Total aromatics C5-35                 | <10        | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/l     | TM5/PM16/PM30 |
| Total aliphatics and aromatics(C5-35) | <10        | <10        | <10        |  |  |  |  |  |  |  | <10                                                          | ug/l     | TM5/PM16/PM30 |
| Sulphate as SO <sub>4</sub>           | 29.5       | 40.0       | 171.5      |  |  |  |  |  |  |  | <0.5                                                         | mg/l     | TM38/PM0      |
| Hexavalent Chromium                   | <0.006     | <0.006     | <0.006     |  |  |  |  |  |  |  | <0.006                                                       | mg/l     | TM38/PM0      |
| Total Alkalinity as CaCO <sub>3</sub> | 224        | 218        | 2536       |  |  |  |  |  |  |  | <1                                                           | mg/l     | TM75/PM0      |
| Dissolved Organic Carbon              | 3          | 3          | 5          |  |  |  |  |  |  |  | <2                                                           | mg/l     | TM60/PM0      |
| pH                                    | 7.71       | 7.80       | 7.62       |  |  |  |  |  |  |  | <0.01                                                        | pH units | TM73/PM0      |
| Total Organic Carbon                  | <2         | 2          | 2          |  |  |  |  |  |  |  | <2                                                           | mg/l     | TM60/PM0      |

**Client Name:** Groundtech Consulting Limited  
**Reference:** GRO-22021  
**Location:** Evoni, Clayton Lane  
**Contact:** Emma Welch  
**EMT Job No:** 23/3827

Please see attached notes for all abbreviations and acronyms

QF-PM 3.1.3 v11

# Element Materials Technology

**Client Name:** Groundtech Consulting Limited  
**Reference:** GRO-22021  
**Location:** Evoni, Clayton Lane  
**Contact:** Emma Welch  
**EMT Job No:** 23/3827

**VOC Report :** Liquid

| EMT Sample No.                          | 1-5        | 6-10       | 11-15      |  |  |  |  |  |  |  | Please see attached notes for all abbreviations and acronyms |       |            |
|-----------------------------------------|------------|------------|------------|--|--|--|--|--|--|--|--------------------------------------------------------------|-------|------------|
| Sample ID                               | BH01       | BH02       | BH03       |  |  |  |  |  |  |  |                                                              |       |            |
| Depth                                   |            |            |            |  |  |  |  |  |  |  |                                                              |       |            |
| COC No / misc                           |            |            |            |  |  |  |  |  |  |  |                                                              |       |            |
| Containers                              | V HNUF P G | V HNUF P G | V HNUF P G |  |  |  |  |  |  |  |                                                              |       |            |
| Sample Date                             | 10/03/2023 | 10/03/2023 | 10/03/2023 |  |  |  |  |  |  |  |                                                              |       |            |
| Sample Type                             | Liquid     | Liquid     | Liquid     |  |  |  |  |  |  |  |                                                              |       |            |
| Batch Number                            | 1          | 1          | 1          |  |  |  |  |  |  |  | LOD/LOR                                                      | Units | Method No. |
| Date of Receipt                         | 10/03/2023 | 10/03/2023 | 10/03/2023 |  |  |  |  |  |  |  |                                                              |       |            |
| VOC MS                                  |            |            |            |  |  |  |  |  |  |  |                                                              |       |            |
| Dichlorodifluoromethane                 | <2         | <2         | <2         |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| Methyl Tertiary Butyl Ether             | <0.1       | <0.1       | <0.1       |  |  |  |  |  |  |  | <0.1                                                         | ug/l  | TM15/PM10  |
| Chloromethane                           | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| Vinyl Chloride                          | <0.1       | <0.1       | <0.1       |  |  |  |  |  |  |  | <0.1                                                         | ug/l  | TM15/PM10  |
| Bromomethane                            | <1         | <1         | <1         |  |  |  |  |  |  |  | <1                                                           | ug/l  | TM15/PM10  |
| Chloroethane                            | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| Trichlorofluoromethane                  | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| 1,1-Dichloroethene (1,1 DCE)            | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| Dichloromethane (DCM)                   | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| trans-1-2-Dichloroethene                | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| 1,1-Dichloroethane                      | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| cis-1-2-Dichloroethene                  | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| 2,2-Dichloropropane                     | <1         | <1         | <1         |  |  |  |  |  |  |  | <1                                                           | ug/l  | TM15/PM10  |
| Bromochloromethane                      | <2         | <2         | <2         |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| Chloroform                              | <2         | <2         | <2         |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| 1,1,1-Trichloroethane                   | <2         | <2         | <2         |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| 1,1-Dichloropropene                     | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| Carbon tetrachloride                    | <2         | <2         | <2         |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| 1,2-Dichloroethane                      | <2         | <2         | <2         |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| Benzene                                 | <0.5       | <0.5       | <0.5       |  |  |  |  |  |  |  | <0.5                                                         | ug/l  | TM15/PM10  |
| Trichloroethene (TCE)                   | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| 1,2-Dichloropropane                     | <2         | <2         | <2         |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| Dibromomethane                          | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| Bromodichloromethane                    | <2         | <2         | <2         |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| cis-1-3-Dichloropropene                 | <2         | <2         | <2         |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| Toluene                                 | <5         | <5         | <5         |  |  |  |  |  |  |  | <5                                                           | ug/l  | TM15/PM10  |
| trans-1-3-Dichloropropene               | <2         | <2         | <2         |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| 1,1,2-Trichloroethane                   | <2         | <2         | <2         |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| Tetrachloroethene (PCE)                 | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| 1,3-Dichloropropane                     | <2         | <2         | <2         |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| Dibromochloromethane                    | <2         | <2         | <2         |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| 1,2-Dibromoethane                       | <2         | <2         | <2         |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| Chlorobenzene                           | <2         | <2         | <2         |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| 1,1,1,2-Tetrachloroethane               | <2         | <2         | <2         |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| Ethylbenzene                            | <1         | <1         | <1         |  |  |  |  |  |  |  | <1                                                           | ug/l  | TM15/PM10  |
| m/p-Xylene                              | <2         | <2         | <2         |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| o-Xylene                                | <1         | <1         | <1         |  |  |  |  |  |  |  | <1                                                           | ug/l  | TM15/PM10  |
| Styrene                                 | <2         | <2         | <2         |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| Bromoform                               | <2         | <2         | <2         |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| Isopropylbenzene                        | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| 1,1,2,2-Tetrachloroethane               | <4         | <4         | <4         |  |  |  |  |  |  |  | <4                                                           | ug/l  | TM15/PM10  |
| Bromobenzene                            | <2         | <2         | <2         |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| 1,2,3-Trichloropropane                  | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| Propylbenzene                           | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| 2-Chlorotoluene                         | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| 1,3,5-Trimethylbenzene                  | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| 4-Chlorotoluene                         | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| tert-Butylbenzene                       | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| 1,2,4-Trimethylbenzene                  | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| sec-Butylbenzene                        | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| 4-Isopropyltoluene                      | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| 1,3-Dichlorobenzene                     | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| 1,4-Dichlorobenzene                     | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| n-Butylbenzene                          | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| 1,2-Dichlorobenzene                     | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| 1,2-Dibromo-3-chloropropane             | <2         | <2         | <2         |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| 1,2,4-Trichlorobenzene                  | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| Hexachlorobutadiene                     | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| Naphthalene                             | <2         | <2         | <2         |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| 1,2,3-Trichlorobenzene                  | <3         | <3         | <3         |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| Surrogate Recovery Toluene D8           | 134        | 125        | 131        |  |  |  |  |  |  |  | <0                                                           | %     | TM15/PM10  |
| Surrogate Recovery 4-Bromofluorobenzene | 123        | 122        | 120        |  |  |  |  |  |  |  | <0                                                           | %     | TM15/PM10  |

**Client Name:** Groundtech Consulting Limited

**Reference:** GRO-22021

**Location:** Evoni, Clayton Lane

**Contact:** Emma Welch

[illegible]

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating. Only analyses which are accredited are recorded as deviating if set criteria are not met.

# NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 23/3827

## SOILS and ASH

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

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

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

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. Asbestos samples are retained for 6 months.

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

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

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C. Ash samples are dried at 37°C ±5°C.

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

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

## WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

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

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

## STACK EMISSIONS

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

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

## DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

## SURROGATES

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

## DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

## BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

## NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

Laboratory records are kept for a period of no less than 6 years.

## REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

### Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

### Customer Provided Information

Sample ID and depth is information provided by the customer.

## ABBREVIATIONS and ACRONYMS USED

|         |                                                                                                                                                                          |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #       | ISO17025 (UKAS Ref No. 4225) accredited - UK.                                                                                                                            |
| SA      | ISO17025 (SANAS Ref No.T0729) accredited - South Africa                                                                                                                  |
| B       | Indicates analyte found in associated method blank.                                                                                                                      |
| DR      | Dilution required.                                                                                                                                                       |
| M       | MCERTS accredited.                                                                                                                                                       |
| NA      | Not applicable                                                                                                                                                           |
| NAD     | No Asbestos Detected.                                                                                                                                                    |
| ND      | None Detected (usually refers to VOC and/SVOC TICs).                                                                                                                     |
| NDP     | No Determination Possible                                                                                                                                                |
| SS      | Calibrated against a single substance                                                                                                                                    |
| SV      | Surrogate recovery outside performance criteria. This may be due to a matrix effect.                                                                                     |
| W       | Results expressed on as received basis.                                                                                                                                  |
| +       | AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.                                                               |
| >>      | Results above quantitative calibration range. The result should be considered the minimum value and is indicative only. The actual result could be significantly higher. |
| *       | Analysis subcontracted to an Element Materials Technology approved laboratory.                                                                                           |
| AD      | Samples are dried at 35°C ±5°C                                                                                                                                           |
| CO      | Suspected carry over                                                                                                                                                     |
| LOD/LOR | Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS                                                                                                |
| ME      | Matrix Effect                                                                                                                                                            |
| NFD     | No Fibres Detected                                                                                                                                                       |
| BS      | AQC Sample                                                                                                                                                               |
| LB      | Blank Sample                                                                                                                                                             |
| N       | Client Sample                                                                                                                                                            |
| TB      | Trip Blank Sample                                                                                                                                                        |
| OC      | Outside Calibration Range                                                                                                                                                |

## HWOL ACRONYMS AND OPERATORS USED

|       |                                                                      |
|-------|----------------------------------------------------------------------|
| HS    | Headspace Analysis.                                                  |
| EH    | Extractable Hydrocarbons - i.e. everything extracted by the solvent. |
| CU    | Clean-up - e.g. by florisil, silica gel.                             |
| 1D    | GC - Single coil gas chromatography.                                 |
| Total | Aliphatics & Aromatics.                                              |
| AL    | Aliphatics only.                                                     |
| AR    | Aromatics only.                                                      |
| 2D    | GC-GC - Double coil gas chromatography.                              |
| #1    | EH_Total but with humics mathematically subtracted                   |
| #2    | EU_Total but with fatty acids mathematically subtracted              |
| _     | Operator - underscore to separate acronyms (exception for +).        |
| +     | Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total   |
| MS    | Mass Spectrometry.                                                   |

EMT Job No: 23/3827

| Test Method No. | Description                                                                                                                                                                                                                                                                                                                         | Prep Method No. (if appropriate) | Description                                                                                                                                                        | ISO 17025 (UKAS/ANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------------------|-------------------------------------------------|------------------------------|
| TM4             | Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.                                                                                                                                                                                                                                  | PM30                             | Water samples are extracted with solvent using a magnetic stirrer to create a vortex.                                                                              |                       |                        |                                                 |                              |
| TM5             | Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GC/FID. For waters the solvent extracts dissolved phase plus a sheen if present.                                                                                                                 | PM16/PM30                        | Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE/Water samples are extracted with solvent using a magnetic stirrer to create a vortex.  |                       |                        |                                                 |                              |
| TM5/TM36        | please refer to TM5 and TM36 for method details                                                                                                                                                                                                                                                                                     | PM12/PM16/PM30                   | please refer to PM16/PM30 and PM12 for method details                                                                                                              |                       |                        |                                                 |                              |
| TM15            | Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.                                                                                                                                                                                                                   | PM10                             | Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.                                                           |                       |                        |                                                 |                              |
| TM16            | Modified USEPA 8270D v5:2014. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.                                                                                                                                                                                                                       | PM30                             | Water samples are extracted with solvent using a magnetic stirrer to create a vortex.                                                                              |                       |                        |                                                 |                              |
| TM30            | Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEPA 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996 | PM14                             | Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified |                       |                        |                                                 |                              |
| TM36            | Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.    | PM12                             | Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.                                                           |                       |                        |                                                 |                              |
| TM38            | Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013                               | PM0                              | No preparation is required.                                                                                                                                        |                       |                        |                                                 |                              |
| TM60            | TC/TOC analysis of Waters by High Temperature Combustion followed by NDIR detection. Based on the following modified standard methods: USEPA 9060A (2002), APHA SMEWW 5310B:1999 22nd Edition, ASTM D 7573, and USEPA 415.1.                                                                                                        | PM0                              | No preparation is required.                                                                                                                                        |                       |                        |                                                 |                              |
| TM73            | Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.                                                                                                                                                                                           | PM0                              | No preparation is required.                                                                                                                                        |                       |                        |                                                 |                              |

EMT Job No: 23/3827

| Test Method No. | Description                                                                                               | Prep Method No. (if appropriate) | Description                 | ISO 17025 (UKAS/S ANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|-----------------|-----------------------------------------------------------------------------------------------------------|----------------------------------|-----------------------------|-------------------------|------------------------|-------------------------------------------------|------------------------------|
| TM75            | Modified US EPA method 310.1 (1978). Determination of Alkalinity by Metrohm automated titration analyser. | PM0                              | No preparation is required. |                         |                        |                                                 |                              |
|                 |                                                                                                           |                                  |                             |                         |                        |                                                 |                              |
|                 |                                                                                                           |                                  |                             |                         |                        |                                                 |                              |
|                 |                                                                                                           |                                  |                             |                         |                        |                                                 |                              |
|                 |                                                                                                           |                                  |                             |                         |                        |                                                 |                              |
|                 |                                                                                                           |                                  |                             |                         |                        |                                                 |                              |
|                 |                                                                                                           |                                  |                             |                         |                        |                                                 |                              |
|                 |                                                                                                           |                                  |                             |                         |                        |                                                 |                              |
|                 |                                                                                                           |                                  |                             |                         |                        |                                                 |                              |
|                 |                                                                                                           |                                  |                             |                         |                        |                                                 |                              |

Groundtech Consulting Limited

PO Box 499  
Manchester  
United Kingdom  
M28 8EE



4225

**Attention :** Emma Welch  
**Date :** 21st April, 2023  
**Your reference :** GRO-22021  
**Our reference :** Test Report 23/4782 Batch 1 23/5134 Batch 1  
**Location :** Evonik, Clayton Lane  
**Date samples received :**  
**Status :** Final report  
**Issue :** 1

Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied. All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

**Authorised By:**



**Bruce Leslie**  
Project Manager

Please include all sections of this report if it is reproduced

## Element Materials Technology

**Client Name:** Groundtech Consulting Limited  
**Reference:** GRO-22021  
**Location:** Evonik, Clayton Lane  
**Contact:** Emma Welch

**Report :** Liquid

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

| EMT Job No.                             | 23/4782      | 23/4782      | 23/4782      | 23/5134      |  |  |  |  |  |  | Please see attached notes for all abbreviations and acronyms |       |            |
|-----------------------------------------|--------------|--------------|--------------|--------------|--|--|--|--|--|--|--------------------------------------------------------------|-------|------------|
| EMT Sample No.                          | 1-5          | 6-10         | 11-15        | 1-5          |  |  |  |  |  |  |                                                              |       |            |
| Sample ID                               | BH01         | BH02         | BH03         | BH103        |  |  |  |  |  |  |                                                              |       |            |
| Depth                                   |              |              |              |              |  |  |  |  |  |  |                                                              |       |            |
| COC No / misc                           |              |              |              |              |  |  |  |  |  |  |                                                              |       |            |
| Containers                              | V HNUF P G   | V HN P G     | V HN P G     | V HNUF G     |  |  |  |  |  |  |                                                              |       |            |
| Sample Date                             | 24/03/2023   | 24/03/2023   | 24/03/2023   | 31/03/2023   |  |  |  |  |  |  |                                                              |       |            |
| Sample Type                             | Ground Water | Ground Water | Ground Water | Ground Water |  |  |  |  |  |  |                                                              |       |            |
| Batch Number                            | 1            | 1            | 1            | 1            |  |  |  |  |  |  |                                                              |       |            |
| Date of Receipt                         | 27/03/2023   | 27/03/2023   | 27/03/2023   | 31/03/2023   |  |  |  |  |  |  | LOD/LOR                                                      | Units | Method No. |
| Dissolved Arsenic #                     | <2.5         | <2.5         | <2.5         | -            |  |  |  |  |  |  | <2.5                                                         | ug/l  | TM30/PM14  |
| Dissolved Cadmium #                     | <0.5         | <0.5         | <0.5         | -            |  |  |  |  |  |  | <0.5                                                         | ug/l  | TM30/PM14  |
| Total Dissolved Chromium #              | <1.5         | <1.5         | <1.5         | -            |  |  |  |  |  |  | <1.5                                                         | ug/l  | TM30/PM14  |
| Dissolved Copper #                      | <7           | <7           | <7           | -            |  |  |  |  |  |  | <7                                                           | ug/l  | TM30/PM14  |
| Dissolved Lead #                        | <5           | <5           | <5           | -            |  |  |  |  |  |  | <5                                                           | ug/l  | TM30/PM14  |
| Dissolved Mercury #                     | <1           | <1           | <1           | -            |  |  |  |  |  |  | <1                                                           | ug/l  | TM30/PM14  |
| Dissolved Nickel #                      | <2           | <2           | <2           | -            |  |  |  |  |  |  | <2                                                           | ug/l  | TM30/PM14  |
| Dissolved Selenium #                    | <3           | <3           | <3           | -            |  |  |  |  |  |  | <3                                                           | ug/l  | TM30/PM14  |
| Dissolved Zinc #                        | <3           | <3           | 3            | -            |  |  |  |  |  |  | <3                                                           | ug/l  | TM30/PM14  |
| PAH MS                                  |              |              |              |              |  |  |  |  |  |  |                                                              |       |            |
| Naphthalene #                           | <0.1         | <0.1         | -            | <0.1         |  |  |  |  |  |  | <0.1                                                         | ug/l  | TM4/PM30   |
| Acenaphthylene #                        | <0.005       | <0.005       | -            | <0.005       |  |  |  |  |  |  | <0.005                                                       | ug/l  | TM4/PM30   |
| Acenaphthene #                          | <0.005       | <0.005       | -            | <0.005       |  |  |  |  |  |  | <0.005                                                       | ug/l  | TM4/PM30   |
| Fluorene #                              | <0.005       | <0.005       | -            | <0.005       |  |  |  |  |  |  | <0.005                                                       | ug/l  | TM4/PM30   |
| Phenanthrene #                          | <0.005       | <0.005       | -            | <0.005       |  |  |  |  |  |  | <0.005                                                       | ug/l  | TM4/PM30   |
| Anthracene #                            | <0.005       | <0.005       | -            | <0.005       |  |  |  |  |  |  | <0.005                                                       | ug/l  | TM4/PM30   |
| Fluoranthene #                          | <0.005       | <0.005       | -            | <0.005       |  |  |  |  |  |  | <0.005                                                       | ug/l  | TM4/PM30   |
| Pyrene #                                | <0.005       | <0.005       | -            | <0.005       |  |  |  |  |  |  | <0.005                                                       | ug/l  | TM4/PM30   |
| Benzo(a)anthracene #                    | <0.005       | <0.005       | -            | <0.005       |  |  |  |  |  |  | <0.005                                                       | ug/l  | TM4/PM30   |
| Chrysene #                              | <0.005       | <0.005       | -            | <0.005       |  |  |  |  |  |  | <0.005                                                       | ug/l  | TM4/PM30   |
| Benzo(bk)fluoranthene #                 | <0.008       | <0.008       | -            | <0.008       |  |  |  |  |  |  | <0.008                                                       | ug/l  | TM4/PM30   |
| Benzo(a)pyrene #                        | <0.005       | <0.005       | -            | <0.005       |  |  |  |  |  |  | <0.005                                                       | ug/l  | TM4/PM30   |
| Indeno(123cd)pyrene #                   | <0.005       | <0.005       | -            | <0.005       |  |  |  |  |  |  | <0.005                                                       | ug/l  | TM4/PM30   |
| Dibenzo(ah)anthracene #                 | <0.005       | <0.005       | -            | <0.005       |  |  |  |  |  |  | <0.005                                                       | ug/l  | TM4/PM30   |
| Benzo(ghi)perylene #                    | <0.005       | <0.005       | -            | <0.005       |  |  |  |  |  |  | <0.005                                                       | ug/l  | TM4/PM30   |
| PAH 16 Total #                          | <0.173       | <0.173       | -            | <0.173       |  |  |  |  |  |  | <0.173                                                       | ug/l  | TM4/PM30   |
| Benzo(b)fluoranthene                    | <0.008       | <0.008       | -            | <0.008       |  |  |  |  |  |  | <0.008                                                       | ug/l  | TM4/PM30   |
| Benzo(k)fluoranthene                    | <0.008       | <0.008       | -            | <0.008       |  |  |  |  |  |  | <0.008                                                       | ug/l  | TM4/PM30   |
| PAH Surrogate % Recovery                | 78           | 74           | -            | 91           |  |  |  |  |  |  | <0                                                           | %     | TM4/PM30   |
| Methyl Tertiary Butyl Ether #           | <0.1         | <0.1         | -            | <0.1         |  |  |  |  |  |  | <0.1                                                         | ug/l  | TM15/PM10  |
| Benzene #                               | <0.5         | <0.5         | -            | <0.5         |  |  |  |  |  |  | <0.5                                                         | ug/l  | TM15/PM10  |
| Toluene #                               | <5           | <5           | -            | <5           |  |  |  |  |  |  | <5                                                           | ug/l  | TM15/PM10  |
| Ethylbenzene #                          | <1           | <1           | -            | <1           |  |  |  |  |  |  | <1                                                           | ug/l  | TM15/PM10  |
| m/p-Xylene #                            | <2           | <2           | -            | <2           |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| o-Xylene #                              | <1           | <1           | -            | <1           |  |  |  |  |  |  | <1                                                           | ug/l  | TM15/PM10  |
| Surrogate Recovery Toluene D8           | -            | -            | -            | 99           |  |  |  |  |  |  | <0                                                           | %     | TM15/PM10  |
| Surrogate Recovery 4-Bromofluorobenzene | -            | -            | -            | 105          |  |  |  |  |  |  | <0                                                           | %     | TM15/PM10  |

## Element Materials Technology

**Client Name:** Groundtech Consulting Limited  
**Reference:** GRO-22021  
**Location:** Evonik, Clayton Lane  
**Contact:** Emma Welch

**Report :** Liquid

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

| EMT Job No.                             | 23/4782      | 23/4782      | 23/4782      | 23/5134      |  |  |  |  |  |         |          |               |
|-----------------------------------------|--------------|--------------|--------------|--------------|--|--|--|--|--|---------|----------|---------------|
| EMT Sample No.                          | 1-5          | 6-10         | 11-15        | 1-5          |  |  |  |  |  |         |          |               |
| Sample ID                               | BH01         | BH02         | BH03         | BH103        |  |  |  |  |  |         |          |               |
| Depth                                   |              |              |              |              |  |  |  |  |  |         |          |               |
| COC No / misc                           |              |              |              |              |  |  |  |  |  |         |          |               |
| Containers                              | V HNUF P G   | V HN P G     | V HN P G     | V HNUF G     |  |  |  |  |  |         |          |               |
| Sample Date                             | 24/03/2023   | 24/03/2023   | 24/03/2023   | 31/03/2023   |  |  |  |  |  |         |          |               |
| Sample Type                             | Ground Water | Ground Water | Ground Water | Ground Water |  |  |  |  |  |         |          |               |
| Batch Number                            | 1            | 1            | 1            | 1            |  |  |  |  |  |         |          |               |
| Date of Receipt                         | 27/03/2023   | 27/03/2023   | 27/03/2023   | 31/03/2023   |  |  |  |  |  |         |          |               |
|                                         |              |              |              |              |  |  |  |  |  | LOD/LOR | Units    | Method No.    |
| TPH CWG                                 |              |              |              |              |  |  |  |  |  |         |          |               |
| <b>Aliphatics</b>                       |              |              |              |              |  |  |  |  |  |         |          |               |
| >C5-C6 #                                | <10          | <10          | -            | <10          |  |  |  |  |  | <10     | ug/l     | TM36/PM12     |
| >C6-C8 #                                | <10          | <10          | -            | <10          |  |  |  |  |  | <10     | ug/l     | TM36/PM12     |
| >C8-C10 #                               | <10          | <10          | -            | <10          |  |  |  |  |  | <10     | ug/l     | TM36/PM12     |
| >C10-C12 #                              | <5           | <5           | -            | <5           |  |  |  |  |  | <5      | ug/l     | TM5/PM16/PM30 |
| >C12-C16 #                              | <10          | <10          | -            | <10          |  |  |  |  |  | <10     | ug/l     | TM5/PM16/PM30 |
| >C16-C21 #                              | <10          | <10          | -            | <10          |  |  |  |  |  | <10     | ug/l     | TM5/PM16/PM30 |
| >C21-C35 #                              | <10          | <10          | -            | <10          |  |  |  |  |  | <10     | ug/l     | TM5/PM16/PM30 |
| Total aliphatics C5-35 #                | <10          | <10          | -            | <10          |  |  |  |  |  | <10     | ug/l     | TM5/PM16/PM30 |
| <b>Aromatics</b>                        |              |              |              |              |  |  |  |  |  |         |          |               |
| >C5-EC7 #                               | <10          | <10          | -            | <10          |  |  |  |  |  | <10     | ug/l     | TM36/PM12     |
| >EC7-EC8 #                              | <10          | <10          | -            | <10          |  |  |  |  |  | <10     | ug/l     | TM36/PM12     |
| >EC8-EC10 #                             | <10          | <10          | -            | <10          |  |  |  |  |  | <10     | ug/l     | TM36/PM12     |
| >EC10-EC12 #                            | <5           | <5           | -            | <5           |  |  |  |  |  | <5      | ug/l     | TM5/PM16/PM30 |
| >EC12-EC16 #                            | <10          | <10          | -            | <10          |  |  |  |  |  | <10     | ug/l     | TM5/PM16/PM30 |
| >EC16-EC21 #                            | <10          | <10          | -            | <10          |  |  |  |  |  | <10     | ug/l     | TM5/PM16/PM30 |
| >EC21-EC35 #                            | <10          | <10          | -            | <10          |  |  |  |  |  | <10     | ug/l     | TM5/PM16/PM30 |
| Total aromatics C5-35 #                 | <10          | <10          | -            | <10          |  |  |  |  |  | <10     | ug/l     | TM5/PM16/PM30 |
| Total aliphatics and aromatics(C5-35) # | <10          | <10          | -            | <10          |  |  |  |  |  | <10     | ug/l     | TM5/PM16/PM30 |
| Sulphate as SO4 #                       | 90.4         | 38.6         | 36.4         | -            |  |  |  |  |  | <0.5    | mg/l     | TM38/PM0      |
| Total Alkalinity as CaCO3 #             | 1550         | 190          | 212          | -            |  |  |  |  |  | <1      | mg/l     | TM75/PM0      |
| Dissolved Organic Carbon #              | 6            | 4            | <2           | -            |  |  |  |  |  | <2      | mg/l     | TM60/PM0      |
| pH #                                    | 7.72         | 8.16         | 7.97         | -            |  |  |  |  |  | <0.01   | pH units | TM73/PM0      |

Please see attached notes for all abbreviations and acronyms

## Element Materials Technology

**Client Name:** Groundtech Consulting Limited  
**Reference:** GRO-22021  
**Location:** Evonik, Clayton Lane  
**Contact:** Emma Welch

SVOC Report : Liquid

|                               |                |                 |                |  |  |  |  |  |  |  |                                                              |       |            |
|-------------------------------|----------------|-----------------|----------------|--|--|--|--|--|--|--|--------------------------------------------------------------|-------|------------|
| EMT Job No.<br>EMT Sample No. | 23/4782<br>1-5 | 23/4782<br>6-10 | 23/5134<br>1-5 |  |  |  |  |  |  |  | Please see attached notes for all abbreviations and acronyms |       |            |
| Sample ID                     | BH01           | BH02            | BH103          |  |  |  |  |  |  |  |                                                              |       |            |
| Depth                         |                |                 |                |  |  |  |  |  |  |  |                                                              |       |            |
| COC No / misc                 |                |                 |                |  |  |  |  |  |  |  |                                                              |       |            |
| Containers                    | V HNUF P G     | V HN P G        | V HNUF G       |  |  |  |  |  |  |  |                                                              |       |            |
| Sample Date                   | 24/03/2023     | 24/03/2023      | 31/03/2023     |  |  |  |  |  |  |  |                                                              |       |            |
| Sample Type                   | Ground Water   | Ground Water    | Ground Water   |  |  |  |  |  |  |  |                                                              |       |            |
| Batch Number                  | 1              | 1               | 1              |  |  |  |  |  |  |  | LOD/LOR                                                      | Units | Method No. |
| Date of Receipt               | 27/03/2023     | 27/03/2023      | 31/03/2023     |  |  |  |  |  |  |  |                                                              |       |            |
| SVOC MS                       |                |                 |                |  |  |  |  |  |  |  |                                                              |       |            |
| Phenols                       |                |                 |                |  |  |  |  |  |  |  |                                                              |       |            |
| 2-Chlorophenol #              | <1             | <1              | <1             |  |  |  |  |  |  |  | <1                                                           | ug/l  | TM16/PM30  |
| 2-Methylphenol #              | <0.5           | <0.5            | <0.5           |  |  |  |  |  |  |  | <0.5                                                         | ug/l  | TM16/PM30  |
| 2-Nitrophenol                 | <0.5           | <0.5            | <0.5           |  |  |  |  |  |  |  | <0.5                                                         | ug/l  | TM16/PM30  |
| 2,4-Dichlorophenol #          | <0.5           | <0.5            | <0.5           |  |  |  |  |  |  |  | <0.5                                                         | ug/l  | TM16/PM30  |
| 2,4-Dimethylphenol            | <1             | <1              | <1             |  |  |  |  |  |  |  | <1                                                           | ug/l  | TM16/PM30  |
| 2,4,5-Trichlorophenol #       | <0.5           | <0.5            | <0.5           |  |  |  |  |  |  |  | <0.5                                                         | ug/l  | TM16/PM30  |
| 2,4,6-Trichlorophenol         | <1             | <1              | <1             |  |  |  |  |  |  |  | <1                                                           | ug/l  | TM16/PM30  |
| 4-Chloro-3-methylphenol #     | <0.5           | <0.5            | <0.5           |  |  |  |  |  |  |  | <0.5                                                         | ug/l  | TM16/PM30  |
| 4-Methylphenol                | <1             | <1              | <1             |  |  |  |  |  |  |  | <1                                                           | ug/l  | TM16/PM30  |
| 4-Nitrophenol                 | <10            | <10             | <10            |  |  |  |  |  |  |  | <10                                                          | ug/l  | TM16/PM30  |
| Pentachlorophenol             | <1             | <1              | <1             |  |  |  |  |  |  |  | <1                                                           | ug/l  | TM16/PM30  |
| Phenol                        | <1             | <1              | <1             |  |  |  |  |  |  |  | <1                                                           | ug/l  | TM16/PM30  |
| PAHs                          |                |                 |                |  |  |  |  |  |  |  |                                                              |       |            |
| 2-Chloronaphthalene #         | <1             | <1              | <1             |  |  |  |  |  |  |  | <1                                                           | ug/l  | TM16/PM30  |
| 2-Methylnaphthalene #         | <1             | <1              | <1             |  |  |  |  |  |  |  | <1                                                           | ug/l  | TM16/PM30  |
| Phthalates                    |                |                 |                |  |  |  |  |  |  |  |                                                              |       |            |
| Bis(2-ethylhexyl) phthalate   | <5             | <5              | <5             |  |  |  |  |  |  |  | <5                                                           | ug/l  | TM16/PM30  |
| Butylbenzyl phthalate         | <1             | <1              | <1             |  |  |  |  |  |  |  | <1                                                           | ug/l  | TM16/PM30  |
| Di-n-butyl phthalate #        | <1.5           | <1.5            | <1.5           |  |  |  |  |  |  |  | <1.5                                                         | ug/l  | TM16/PM30  |
| Di-n-Octyl phthalate          | <1             | <1              | <1             |  |  |  |  |  |  |  | <1                                                           | ug/l  | TM16/PM30  |
| Diethyl phthalate #           | <1             | <1              | <1             |  |  |  |  |  |  |  | <1                                                           | ug/l  | TM16/PM30  |
| Dimethyl phthalate            | <1             | <1              | <1             |  |  |  |  |  |  |  | <1                                                           | ug/l  | TM16/PM30  |
| Other SVOCs                   |                |                 |                |  |  |  |  |  |  |  |                                                              |       |            |
| 1,2-Dichlorobenzene #         | <1             | <1              | <1             |  |  |  |  |  |  |  | <1                                                           | ug/l  | TM16/PM30  |
| 1,2,4-Trichlorobenzene #      | <1             | <1              | <1             |  |  |  |  |  |  |  | <1                                                           | ug/l  | TM16/PM30  |
| 1,3-Dichlorobenzene #         | <1             | <1              | <1             |  |  |  |  |  |  |  | <1                                                           | ug/l  | TM16/PM30  |
| 1,4-Dichlorobenzene #         | <1             | <1              | <1             |  |  |  |  |  |  |  | <1                                                           | ug/l  | TM16/PM30  |
| 2-Nitroaniline                | <1             | <1              | <1             |  |  |  |  |  |  |  | <1                                                           | ug/l  | TM16/PM30  |
| 2,4-Dinitrotoluene #          | <0.5           | <0.5            | <0.5           |  |  |  |  |  |  |  | <0.5                                                         | ug/l  | TM16/PM30  |
| 2,6-Dinitrotoluene            | <1             | <1              | <1             |  |  |  |  |  |  |  | <1                                                           | ug/l  | TM16/PM30  |
| 3-Nitroaniline                | <1             | <1              | <1             |  |  |  |  |  |  |  | <1                                                           | ug/l  | TM16/PM30  |
| 4-Bromophenylphenylether #    | <1             | <1              | <1             |  |  |  |  |  |  |  | <1                                                           | ug/l  | TM16/PM30  |
| 4-Chloroaniline               | <1             | <1              | <1             |  |  |  |  |  |  |  | <1                                                           | ug/l  | TM16/PM30  |
| 4-Chlorophenylphenylether #   | <1             | <1              | <1             |  |  |  |  |  |  |  | <1                                                           | ug/l  | TM16/PM30  |
| 4-Nitroaniline                | <0.5           | <0.5            | <0.5           |  |  |  |  |  |  |  | <0.5                                                         | ug/l  | TM16/PM30  |
| Azobenzene #                  | <0.5           | <0.5            | <0.5           |  |  |  |  |  |  |  | <0.5                                                         | ug/l  | TM16/PM30  |
| Bis(2-chloroethoxy)methane #  | <0.5           | <0.5            | <0.5           |  |  |  |  |  |  |  | <0.5                                                         | ug/l  | TM         |

# Element Materials Technology

**Client Name:** Groundtech Consulting Limited  
**Reference:** GRO-22021  
**Location:** Evonik, Clayton Lane  
**Contact:** Emma Welch

**VOC Report :** Liquid

| EMT Job No.<br>EMT Sample No.           | 23/4782<br>1-5 | 23/4782<br>6-10 | 23/5134<br>1-5 |  |  |  |  |  |  |  | Please see attached notes for all abbreviations and acronyms |       |            |
|-----------------------------------------|----------------|-----------------|----------------|--|--|--|--|--|--|--|--------------------------------------------------------------|-------|------------|
| Sample ID                               | BH01           | BH02            | BH103          |  |  |  |  |  |  |  |                                                              |       |            |
| Depth                                   |                |                 |                |  |  |  |  |  |  |  |                                                              |       |            |
| COC No / misc                           |                |                 |                |  |  |  |  |  |  |  |                                                              |       |            |
| Containers                              | V HNUF P G     | V HN P G        | V HNUF G       |  |  |  |  |  |  |  |                                                              |       |            |
| Sample Date                             | 24/03/2023     | 24/03/2023      | 31/03/2023     |  |  |  |  |  |  |  |                                                              |       |            |
| Sample Type                             | Ground Water   | Ground Water    | Ground Water   |  |  |  |  |  |  |  |                                                              |       |            |
| Batch Number                            | 1              | 1               | 1              |  |  |  |  |  |  |  |                                                              |       |            |
| Date of Receipt                         | 27/03/2023     | 27/03/2023      | 31/03/2023     |  |  |  |  |  |  |  | LOD/LOR                                                      | Units | Method No. |
| VOC MS                                  |                |                 |                |  |  |  |  |  |  |  |                                                              |       |            |
| Dichlorodifluoromethane                 | <2             | <2              | <2             |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| Methyl Tertiary Butyl Ether #           | <0.1           | <0.1            | <0.1           |  |  |  |  |  |  |  | <0.1                                                         | ug/l  | TM15/PM10  |
| Chloromethane #                         | <3             | <3              | <3             |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| Vinyl Chloride #                        | <0.1           | <0.1            | <0.1           |  |  |  |  |  |  |  | <0.1                                                         | ug/l  | TM15/PM10  |
| Bromomethane                            | <1             | <1              | <1             |  |  |  |  |  |  |  | <1                                                           | ug/l  | TM15/PM10  |
| Chloroethane #                          | <3             | <3              | <3             |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| Trichlorofluoromethane #                | <3             | <3              | <3             |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| 1,1-Dichloroethene (1,1 DCE) #          | <3             | <3              | <3             |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| Dichloromethane (DCM) #                 | <3*            | <3*             | <3             |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| trans-1-2-Dichloroethene #              | <3             | <3              | <3             |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| 1,1-Dichloroethane #                    | <3             | <3              | <3             |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| cis-1-2-Dichloroethene #                | <3             | <3              | <3             |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| 2,2-Dichloropropane                     | <1             | <1              | <1             |  |  |  |  |  |  |  | <1                                                           | ug/l  | TM15/PM10  |
| Bromochloromethane #                    | <2             | <2              | <2             |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| Chloroform #                            | <2             | <2              | <2             |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| 1,1,1-Trichloroethane #                 | <2             | <2              | <2             |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| 1,1-Dichloropropene #                   | <3             | <3              | <3             |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| Carbon tetrachloride #                  | <2             | <2              | <2             |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| 1,2-Dichloroethane #                    | <2             | <2              | <2             |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| Benzene #                               | <0.5           | <0.5            | <0.5           |  |  |  |  |  |  |  | <0.5                                                         | ug/l  | TM15/PM10  |
| Trichloroethene (TCE) #                 | <3             | <3              | <3             |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| 1,2-Dichloropropane #                   | <2             | <2              | <2             |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| Dibromomethane #                        | <3             | <3              | <3             |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| Bromodichloromethane #                  | <2             | <2              | <2             |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| cis-1-3-Dichloropropene                 | <2             | <2              | <2             |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| Toluene #                               | <5             | <5              | <5             |  |  |  |  |  |  |  | <5                                                           | ug/l  | TM15/PM10  |
| trans-1-3-Dichloropropene               | <2             | <2              | <2             |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| 1,1,2-Trichloroethane #                 | <2             | <2              | <2             |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| Tetrachloroethene (PCE) #               | <3             | <3              | <3             |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| 1,3-Dichloropropane #                   | <2             | <2              | <2             |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| Dibromochloromethane #                  | <2             | <2              | <2             |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| 1,2-Dibromoethane #                     | <2             | <2              | <2             |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| Chlorobenzene #                         | <2             | <2              | <2             |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| 1,1,1,2-Tetrachloroethane #             | <2             | <2              | <2             |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| Ethylbenzene #                          | <1             | <1              | <1             |  |  |  |  |  |  |  | <1                                                           | ug/l  | TM15/PM10  |
| m/p-Xylene #                            | <2             | <2              | <2             |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| o-Xylene #                              | <1             | <1              | <1             |  |  |  |  |  |  |  | <1                                                           | ug/l  | TM15/PM10  |
| Styrene                                 | <2             | <2              | <2             |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| Bromoform #                             | <2             | <2              | <2             |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| Isopropylbenzene #                      | <3             | <3              | <3             |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| 1,1,2,2-Tetrachloroethane               | <4             | <4              | <4             |  |  |  |  |  |  |  | <4                                                           | ug/l  | TM15/PM10  |
| Bromobenzene #                          | <2             | <2              | <2             |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| 1,2,3-Trichloropropane #                | <3             | <3              | <3             |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| Propylbenzene #                         | <3             | <3              | <3             |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| 2-Chlorotoluene #                       | <3             | <3              | <3             |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| 1,3,5-Trimethylbenzene #                | <3             | <3              | <3             |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| 4-Chlorotoluene #                       | <3             | <3              | <3             |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| tert-Butylbenzene #                     | <3             | <3              | <3             |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| 1,2,4-Trimethylbenzene #                | <3             | <3              | <3             |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| sec-Butylbenzene #                      | <3             | <3              | <3             |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| 4-Isopropyltoluene #                    | <3             | <3              | <3             |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| 1,3-Dichlorobenzene #                   | <3             | <3              | <3             |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| 1,4-Dichlorobenzene #                   | <3             | <3              | <3             |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| n-Butylbenzene #                        | <3             | <3              | <3             |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| 1,2-Dichlorobenzene #                   | <3             | <3              | <3             |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| 1,2-Dibromo-3-chloropropane             | <2             | <2              | <2             |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| 1,2,4-Trichlorobenzene                  | <3             | <3              | <3             |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| Hexachlorobutadiene                     | <3             | <3              | <3             |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| Naphthalene                             | <2             | <2              | <2             |  |  |  |  |  |  |  | <2                                                           | ug/l  | TM15/PM10  |
| 1,2,3-Trichlorobenzene                  | <3             | <3              | <3             |  |  |  |  |  |  |  | <3                                                           | ug/l  | TM15/PM10  |
| Surrogate Recovery Toluene D8           | -              | -               | 99             |  |  |  |  |  |  |  | <0                                                           | %     | TM15/PM10  |
| Surrogate Recovery 4-Bromofluorobenzene | -              | -               | 105            |  |  |  |  |  |  |  | <0                                                           | %     | TM15/PM10  |

**Matrix : Liquid**

6 of 13

**Client Name:** Groundtech Consulting Limited

Reference: GRO-22021

**Location:** Evonik, Clayton Lane

**Contact:** Emma Welch

**Matrix : Liquid**

[illegible]

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.

Only analyses which are accredited are recorded as deviating if set criteria are not met.

## NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 23/4782 23/5134

### SOILS and ASH

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

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

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

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. Asbestos samples are retained for 6 months.

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

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

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C. Ash samples are dried at 37°C ±5°C.

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

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

### WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

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

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

### STACK EMISSIONS

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

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

### DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

### SURROGATES

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

### DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

### BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

## **NOTE**

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

Laboratory records are kept for a period of no less than 6 years.

## **REPORTS FROM THE SOUTH AFRICA LABORATORY**

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

### **Measurement Uncertainty**

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

### **Customer Provided Information**

Sample ID and depth is information provided by the customer.

## ABBREVIATIONS and ACRONYMS USED

|         |                                                                                                                                                                          |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #       | ISO17025 (UKAS Ref No. 4225) accredited - UK.                                                                                                                            |
| SA      | ISO17025 (SANAS Ref No.T0729) accredited - South Africa                                                                                                                  |
| B       | Indicates analyte found in associated method blank.                                                                                                                      |
| DR      | Dilution required.                                                                                                                                                       |
| M       | MCERTS accredited.                                                                                                                                                       |
| NA      | Not applicable                                                                                                                                                           |
| NAD     | No Asbestos Detected.                                                                                                                                                    |
| ND      | None Detected (usually refers to VOC and/SVOC TICs).                                                                                                                     |
| NDP     | No Determination Possible                                                                                                                                                |
| SS      | Calibrated against a single substance                                                                                                                                    |
| SV      | Surrogate recovery outside performance criteria. This may be due to a matrix effect.                                                                                     |
| W       | Results expressed on as received basis.                                                                                                                                  |
| +       | AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.                                                               |
| >>      | Results above quantitative calibration range. The result should be considered the minimum value and is indicative only. The actual result could be significantly higher. |
| *       | Analysis subcontracted to an Element Materials Technology approved laboratory.                                                                                           |
| AD      | Samples are dried at 35°C ±5°C                                                                                                                                           |
| CO      | Suspected carry over                                                                                                                                                     |
| LOD/LOR | Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS                                                                                                |
| ME      | Matrix Effect                                                                                                                                                            |
| NFD     | No Fibres Detected                                                                                                                                                       |
| BS      | AQC Sample                                                                                                                                                               |
| LB      | Blank Sample                                                                                                                                                             |
| N       | Client Sample                                                                                                                                                            |
| TB      | Trip Blank Sample                                                                                                                                                        |
| OC      | Outside Calibration Range                                                                                                                                                |

## HWOL ACRONYMS AND OPERATORS USED

|       |                                                                      |
|-------|----------------------------------------------------------------------|
| HS    | Headspace Analysis.                                                  |
| EH    | Extractable Hydrocarbons - i.e. everything extracted by the solvent. |
| CU    | Clean-up - e.g. by florisil, silica gel.                             |
| 1D    | GC - Single coil gas chromatography.                                 |
| Total | Aliphatics & Aromatics.                                              |
| AL    | Aliphatics only.                                                     |
| AR    | Aromatics only.                                                      |
| 2D    | GC-GC - Double coil gas chromatography.                              |
| #1    | EH_Total but with humics mathematically subtracted                   |
| #2    | EU_Total but with fatty acids mathematically subtracted              |
| _     | Operator - underscore to separate acronyms (exception for +).        |
| +     | Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total   |
| MS    | Mass Spectrometry.                                                   |

EMT Job No: 23/4782 23/5134

| Test Method No. | Description                                                                                                                                                                                                                                                                                                                        | Prep Method No. (if appropriate) | Description                                                                                                                                                        | ISO 17025 (UKAS/ANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------------------|-------------------------------------------------|------------------------------|
| TM4             | Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.                                                                                                                                                                                                                                 | PM30                             | Water samples are extracted with solvent using a magnetic stirrer to create a vortex.                                                                              |                       |                        |                                                 |                              |
| TM4             | Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.                                                                                                                                                                                                                                 | PM30                             | Water samples are extracted with solvent using a magnetic stirrer to create a vortex.                                                                              | Yes                   |                        |                                                 |                              |
| TM5             | Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.                                                                                                                 | PM16/PM30                        | Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE/Water samples are extracted with solvent using a magnetic stirrer to create a vortex.  | Yes                   |                        |                                                 |                              |
| TM5             | Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.                                                                                                                 | PM30                             | Water samples are extracted with solvent using a magnetic stirrer to create a vortex.                                                                              |                       |                        |                                                 |                              |
| TM5/TM36        | please refer to TM5 and TM36 for method details                                                                                                                                                                                                                                                                                    | PM12/PM16/PM30                   | please refer to PM16/PM30 and PM12 for method details                                                                                                              | Yes                   |                        |                                                 |                              |
| TM15            | Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.                                                                                                                                                                                                                  | PM10                             | Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.                                                           |                       |                        |                                                 |                              |
| TM15            | Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.                                                                                                                                                                                                                  | PM10                             | Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.                                                           | Yes                   |                        |                                                 |                              |
| TM16            | Modified USEPA 8270D v5:2014. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.                                                                                                                                                                                                                      | PM30                             | Water samples are extracted with solvent using a magnetic stirrer to create a vortex.                                                                              |                       |                        |                                                 |                              |
| TM16            | Modified USEPA 8270D v5:2014. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.                                                                                                                                                                                                                      | PM30                             | Water samples are extracted with solvent using a magnetic stirrer to create a vortex.                                                                              | Yes                   |                        |                                                 |                              |
| TM30            | Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996 | PM14                             | Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified | Yes                   |                        |                                                 |                              |

EMT Job No: 23/4782 23/5134

| Test Method No. | Description                                                                                                                                                                                                                                                                                                                     | Prep Method No. (if appropriate) | Description                                                                                              | ISO 17025 (UKAS/ANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|----------------------------------------------------------------------------------------------------------|-----------------------|------------------------|-------------------------------------------------|------------------------------|
| TM36            | Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested. | PM12                             | Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis. | Yes                   |                        |                                                 |                              |
| TM38            | Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013I                          | PM0                              | No preparation is required.                                                                              | Yes                   |                        |                                                 |                              |
| TM60            | TC/TOC analysis of Waters by High Temperature Combustion followed by NDIR detection. Based on the following modified standard methods: USEPA 9060A (2002), APHA SMEWW 5310B:1999 22nd Edition, ASTM D 7573, and USEPA 415.1.                                                                                                    | PM0                              | No preparation is required.                                                                              | Yes                   |                        |                                                 |                              |
| TM73            | Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.                                                                                                                                                                                       | PM0                              | No preparation is required.                                                                              | Yes                   |                        |                                                 |                              |
| TM75            | Modified US EPA method 310.1 (1978). Determination of Alkalinity by Metrohm automated titration analyser.                                                                                                                                                                                                                       | PM0                              | No preparation is required.                                                                              | Yes                   |                        |                                                 |                              |
|                 |                                                                                                                                                                                                                                                                                                                                 |                                  |                                                                                                          |                       |                        |                                                 |                              |
|                 |                                                                                                                                                                                                                                                                                                                                 |                                  |                                                                                                          |                       |                        |                                                 |                              |
|                 |                                                                                                                                                                                                                                                                                                                                 |                                  |                                                                                                          |                       |                        |                                                 |                              |
|                 |                                                                                                                                                                                                                                                                                                                                 |                                  |                                                                                                          |                       |                        |                                                 |                              |
|                 |                                                                                                                                                                                                                                                                                                                                 |                                  |                                                                                                          |                       |                        |                                                 |                              |

## APPENDIX 6 - Monitoring Data

# PERMANENT GROUND GAS MONITORING FORM



|                 |  |                                |                        |                        |     |                        |            |              |         |  |  |  |
|-----------------|--|--------------------------------|------------------------|------------------------|-----|------------------------|------------|--------------|---------|--|--|--|
| SITE NAME:      |  | EVONIK CHEMICAL WORKS, CLAYTON |                        |                        |     | ENGINEER:              |            | Jack Perkins |         |  |  |  |
| CLIENT:         |  | KENNEDY REDFORD                |                        |                        |     | DATE:                  |            | 10/03/2023   |         |  |  |  |
| JOB NO:         |  | GRO-20221                      |                        |                        |     |                        |            |              |         |  |  |  |
|                 |  |                                |                        |                        |     |                        |            |              |         |  |  |  |
| Pressure Trend: |  | Falling                        | Weather:               | Overcast               |     |                        | Equipment: |              | GFM 436 |  |  |  |
|                 |  |                                |                        |                        |     |                        |            |              |         |  |  |  |
| Ambient:        |  | O <sub>2</sub> (%v/v)          | CH <sub>4</sub> (%v/v) | CO <sub>2</sub> (%v/v) | LEL | H <sub>2</sub> S (ppm) | CO (ppm)   |              |         |  |  |  |
| Start           |  |                                |                        |                        |     |                        |            |              |         |  |  |  |
| Finish          |  |                                |                        |                        |     |                        |            |              |         |  |  |  |

| BH Ref. | Gas Flow Rate (l/hr) |        | Borehole Pressure (mb) | Methane (%v/v) |        |     | Carbon Dioxide (%v/v) |        | Oxygen (%v/v) |        | Hydrogen Sulphide (ppm) |        | Carbon Monoxide (ppm) |        | Q <sub>hg</sub> CO <sub>2</sub> (l/hr) | Q <sub>hg</sub> CH <sub>4</sub> (l/hr) | Atmos Press (mb) | PID (ppm) | Sheen (Y/N) | LNAPL (Y/N) | DNAPL (Y/N) | Depth to Water (m bgl) |
|---------|----------------------|--------|------------------------|----------------|--------|-----|-----------------------|--------|---------------|--------|-------------------------|--------|-----------------------|--------|----------------------------------------|----------------------------------------|------------------|-----------|-------------|-------------|-------------|------------------------|
|         | Peak                 | Steady |                        | Peak           | Steady | LEL | Peak                  | Steady | Peak          | Steady | Peak                    | Steady | Peak                  | Steady |                                        |                                        |                  |           |             |             |             |                        |
|         |                      |        |                        |                |        |     |                       |        |               |        |                         |        |                       |        |                                        |                                        |                  |           | N           |             |             | 20.67                  |
|         |                      |        |                        |                |        |     |                       |        |               |        |                         |        |                       |        |                                        |                                        |                  |           | N           |             |             | 16.07                  |
|         |                      |        |                        |                |        |     |                       |        |               |        |                         |        |                       |        |                                        |                                        |                  |           | N           |             |             | 17.19                  |
| Notes:  |                      |        |                        |                |        |     |                       |        |               |        |                         |        |                       |        |                                        |                                        |                  |           |             |             |             |                        |



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|                 |  |                                |                        |                        |     |                        |            |                            |         |  |  |  |
|-----------------|--|--------------------------------|------------------------|------------------------|-----|------------------------|------------|----------------------------|---------|--|--|--|
| SITE NAME:      |  | EVONIK CHEMICAL WORKS, CLAYTON |                        |                        |     | ENGINEER:              |            | William Sandiford Mitchell |         |  |  |  |
| CLIENT:         |  | KENNEDY REDFORD                |                        |                        |     | DATE:                  |            | 06/04/2023                 |         |  |  |  |
| JOB NO:         |  | GRO-20221                      |                        |                        |     |                        |            |                            |         |  |  |  |
|                 |  |                                |                        |                        |     |                        |            |                            |         |  |  |  |
| Pressure Trend: |  | Steady                         | Weather:               | Raining                |     |                        | Equipment: |                            | GFM 436 |  |  |  |
|                 |  |                                |                        |                        |     |                        |            |                            |         |  |  |  |
| Ambient:        |  | O <sub>2</sub> (%v/v)          | CH <sub>4</sub> (%v/v) | CO <sub>2</sub> (%v/v) | LEL | H <sub>2</sub> S (ppm) | CO (ppm)   |                            |         |  |  |  |
| Start           |  |                                |                        |                        |     |                        |            |                            |         |  |  |  |
| Finish          |  |                                |                        |                        |     |                        |            |                            |         |  |  |  |

| BH Ref. | Gas Flow Rate (l/hr) |        | Borehole Pressure (mb) | Methane (%v/v) |        |     | Carbon Dioxide (%v/v) |        | Oxygen (%v/v) |        | Hydrogen Sulphide (ppm) |        | Carbon Monoxide (ppm) |        | Q <sub>hg</sub> CO <sub>2</sub> (l/hr) | Q <sub>hg</sub> CH <sub>4</sub> (l/hr) | Atmos Press (mb) | PID (ppm) | Sheen (Y/N) | LNAPL (Y/N) | DNAPL (Y/N) | Depth to Water (m bgl) |
|---------|----------------------|--------|------------------------|----------------|--------|-----|-----------------------|--------|---------------|--------|-------------------------|--------|-----------------------|--------|----------------------------------------|----------------------------------------|------------------|-----------|-------------|-------------|-------------|------------------------|
|         | Peak                 | Steady |                        | Peak           | Steady | LEL | Peak                  | Steady | Peak          | Steady | Peak                    | Steady | Peak                  | Steady |                                        |                                        |                  |           |             |             |             |                        |
|         |                      |        |                        |                |        |     |                       |        |               |        |                         |        |                       |        |                                        |                                        |                  |           | N           |             |             | 20.58                  |
|         |                      |        |                        |                |        |     |                       |        |               |        |                         |        |                       |        |                                        |                                        |                  |           | N           |             |             | 16.11                  |
|         |                      |        |                        |                |        |     |                       |        |               |        |                         |        |                       |        |                                        |                                        |                  |           | N           |             |             | 17.29                  |
| Notes:  |                      |        |                        |                |        |     |                       |        |               |        |                         |        |                       |        |                                        |                                        |                  |           |             |             |             |                        |

## APPENDIX 7 - CIRIA Risk Assessment Methodology

## Contaminated Land Risk Assessment

Contaminated Land Risk Assessment is a technique that identifies and considers the associated risk, determines whether the risks are significant and whether action needs to be taken. The four main stages of risk assessment are:

Hazard Identification   ➡   Hazard Assessment   ➡   Risk Estimation   ➡   Risk Evaluation

LCRM outlines the framework to be followed for risk assessment in the UK. The framework is designed to be consistent with UK legislation and policies including planning. The starting point of the risk assessment is to identify the context of the problem and the objectives of the process.

Formulating and developing a conceptual model for the site is an important requirement of risk assessment, this supports the identification and assessment of pollutant linkages. Development of the conceptual model forms the main part of preliminary risk assessment, and the model is subsequently refined or revised as more information and understanding is obtained through the risk assessment process.

Risk is a combination of the likelihood of an event occurring and the magnitude of its consequences. Therefore, both the likelihood and the consequences of an event must be taken into account when assessing risk.

The risk assessment process needs to take into account the degree of confidence required in decisions. Identification of uncertainties is an essential step in risk assessment.

The likelihood of an event is classified on a four-point system using the following terms and definitions from CIRIA C552:

- **High likelihood:** There is a pollution linkage and an event appears very likely in the short term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution;
- **Likely:** There is a pollution linkage and all the elements are present and in the right place, which means it is probable that an event will occur. Circumstances are such that the event is not inevitable, but possible in the short term and likely over the long term;
- **Low likelihood:** There is a pollution linkage and circumstances are possible under which an event could occur. However, it is by no means certain even over a longer period such event would take place, and is less likely in the short term;
- **Unlikely:** There is a pollution linkage but circumstances are such that it is improbable the event would occur even in the long term.

The severity is also classified using a system based on CIRIA C552. The terms and definitions are:

- **Severe:** Short term (acute) risk to human health likely to result in 'significant harm' as defined by the Environment Protection Act 1990, Part IIA. Short-term risk of pollution of sensitive water resources. Catastrophic damage to buildings or property. A short-term risk to a particular ecosystem or organism forming part of that ecosystem (note definition of ecosystem in 'Draft Circular on Contaminated Land', DETR 2000);  
*Examples – High concentrations of contaminant on surface of recreation area, major spillage of contaminants from site into controlled waters, explosion causing building to collapse;*

- **Medium:** Chronic damage to human health ('significant harm' as defined in DETR 2000). Pollution of sensitive water resources. A significant change in a particular ecosystem or organism forming part of that ecosystem (note definition of ecosystem in 'Draft Circular on Contaminated Land', DETR 2000);  
*Examples - Concentrations of contaminants exceed the generic assessment criteria, leaching of contaminants from a site to a Principal or Secondary Aquifer, death of species within a designated nature reserve;*
- **Mild:** Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services ('significant harm' as defined in 'Draft Circular on Contaminated Land', DETR 2000). Damage to sensitive buildings, structures, services or the environment;  
*Examples – Pollution of non-classified groundwater or damage to buildings rendering it unsafe to occupy.*
- **Minor:** harm, not necessarily significant harm, which may result in financial loss or expenditure to resolve. Non-permanent health effects to human health (easily prevented by use of personal protective clothing etc). Easily repairable effects of damage to buildings, structures and services.  
*Examples – Presence of contaminants at such concentrations PPE is required during site work, loss of plants in landscaping scheme or discolouration of concrete.*

Once the likelihood and severity have been determined, a risk category can be assigned using the table below.

|             |                | Consequences |              |              |              |
|-------------|----------------|--------------|--------------|--------------|--------------|
|             |                | Severe       | Medium       | Mild         | Minor        |
| Probability | Highly likely  | Very high    | High         | Moderate     | Moderate/low |
|             | Likely         | High         | Moderate     | Moderate/low | Low          |
|             | Low likelihood | Moderate     | Moderate/low | Low          | Very low     |
|             | Unlikely       | Moderate/low | Low          | Very Low     | Very low     |

Definitions of the risk categories obtained from the above table are as follows together with an assessment of the further work that might be required:

- **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 severe harm is currently happening. This risk, if realised, could result in substantial liability. Urgent investigation 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 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 any such harm would be severe, or if any harm were to occur it would be more likely to be relatively mild. Investigation is normally required to clarify the risk and determine the liability. Some remedial works may be required in the longer term;
- **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 severe.

## APPENDIX 8 - Contaminated Land Legislative Background

## Legislative Background

Environmental liabilities and risks have been evaluated in terms of a source -pathway - target relationship in accordance with the approach set out in:

- The 1995 Environment Act;
- The Contaminated Land (England) Regulations 2000;
- The DETR circular 02/2000 Environmental Protection Act 1990: Part IIA Contaminated Land.

Contaminated land is defined within the legislative framework as land which is in such condition by reason of substances in, on or under the land that:

- 1) Significant harm is being caused or there is a significant possibility of such harm being caused;
- 2) Significant pollution of controlled waters is being or is likely to be caused.

The potential for harm is based on the presence of three factors:

- **Source** - substances that are potential contaminants or pollutants that may cause harm;
- **Pathway** - a potential route by which contaminants can move from the source to the receptor;
- **Receptor** - a receptor that may be harmed, for example the water environment, humans and water.

Where a source, pathway and target are all present a pollutant linkage exists and there is potential for harm to be caused. The presence of a source does not automatically imply that a contamination problem exists, since contamination must be defined in terms of pollutant linkages and unacceptable risk of harm. The nature and importance of both pathways and receptors are site specific and will vary according to the intended end use of the site, its characteristics and its surroundings.

The key principle which supports the SPR approach is 'suitable for use' criteria. This requires remedial action only where contamination is considered to pose unacceptable actual or potential risks to health or the environment and, taking into account the proposed use of the site.

## Relevant Guidance Documents

This report has been prepared in accordance with the list of guidance below however the list is not exhaustive:

- LCRM – Model Procedures;
- Contamination and Environmental Matters - Their implications for Property Professionals (2nd Edition RICS Nov 2003);
- Brownfields – Managing the development of previously developed land – A client's guide, CIRIA 2002;
- DEFRA and Environment Agency publications CLR7 – 10, supported by the TOX guides and SGV guides, dated March 2002;
- DETR Circular 02/2000, Contaminated Land: Implementation of Part IIA of the Environmental Protection Act 1990;
- Environment Agency technical advice to third parties on Pollution of Controlled Waters for Part IIA of the EPA1990, May 2002;

## Relevant Legislative Documents

The following is a non-exhaustive list of legislative framework documents that has been considered in the production of this report:

- The Environment Act (1995);
- The Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance (2012);
- The Environment Protection Act (1990);
- The Contaminated Land (England) Act (2000);
- Contaminated Land (England) Regulations (2012);
- The Water Resources Act (1991);
- The Pollution Prevention and Control (England and Wales) Regulations (2000);
- The Landfill Regulations (England and Wales) Regulations (2002);
- The Landfill (England and Wales) (Amendment) Regulations (2004);
- Health and Safety at Work Act;

## APPENDIX 9 - Limitations

## Limitations

This report (Report) forms part of the Services and if applicable Additional Services undertaken by Groundtech Consulting Ltd pursuant to a written contract (Agreement) which contains detailed provisions including express limitations of the liability of Groundtech Consulting Ltd.

This Report was prepared using reasonable skill and care as stated in the Agreement for the purpose including intended end use stated by the Client (Purpose) and the liability of Groundtech Consulting Ltd in respect of the form and content of this Report is no greater than its liability under the Agreement. All records, measurements notes, or any other data (Data) obtained by or for the benefit of the Consultant were obtained at a specific point in time and it may not be assumed by the Client or any person relying on this Report that the Data will remain unaffected by the passage of time, the seasons, weather conditions, changes in the water table or the carrying out and completion of works at the Site.

Unless otherwise agreed this Report has been prepared exclusively for the use and reliance of the Client and may not be relied upon, by any other party except as provided for in the Agreement. A third party who relies on this Report, does so at their own and sole risk and Groundtech Consulting Ltd has no liability to such parties.

Groundtech Consulting Ltd that this Report is to be used for the Purpose. The Purpose was instrumental in determining the scope and of the Services provided. If the Purpose should change, the Client may not be able to rely on the Report without the separate agreement of Groundtech Consulting Ltd.

Since the Report was written, later changes in legislation, statutory requirements and industry best practices have not been considered and this should be allowed for. Ground conditions can also change (see below) and should be investigated if there is any significant delay in acting on the findings of this Report. The period of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the Report inaccurate or unreliable. The information and conclusions in this Report should not be relied upon in the future without written confirmation from Groundtech Consulting Ltd that it is safe to do so.

The observations and conclusions outlined in this Report are based exclusively on the services that were provided as set out in the agreement between the client and Groundtech Consulting Ltd.

Groundtech Consulting Ltd is not liable for the existence of any condition, the discovery of which would require additional investigation outside the agreed scope of works or core competency. The Report is based upon Groundtech Consulting Ltd's observations of existing physical conditions at the Site gained from site reconnaissance together with interpretation of information including documentation, obtained from third parties and from the Client on the history and usage of the Site. The findings and recommendations contained in this Report are based in part upon information provided by third parties, and Groundtech Consulting Ltd have relied upon such information assuming it to be correct.

Groundtech Consulting Ltd accepts no responsibility for errors or inaccuracies in third party information presented in this Report. Groundtech Consulting Ltd was not authorised to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties, including laboratories and information services, during the performance of the Services or Additional Services. Groundtech Consulting Ltd is not liable for any inaccurate information, misrepresentation of data or conclusions, which may inform the scope of investigation undertaken by Groundtech Consulting Ltd and forms the contract with the client.



Where field investigations have been carried out these have been restricted to a level of detail required to achieve the stated objectives of the work. Ground conditions may also vary due to the ground's heterogeneous properties and because investigation exploratory locations only allow examination of the ground at discrete locations. The potential exists for ground conditions to be encountered which are different to those considered in this Report, particularly between exploratory holes. The extent of the limited area depends on the soil and groundwater conditions, together with other constraints such as the position of any existing structures and underground utilities. If so stipulated in the Agreement, geo-environmental testing was carried out for a limited number of parameters based on an understanding of the available operational and historical information, and it should not be inferred that other chemical species are not present.

Any groundwater conditions entered on the exploratory hole records are those observed at the time of investigation. The groundwater level often has not had time to reach equilibrium and a monitoring period is required. Furthermore, groundwater levels are subject to seasonal variation or changes in local drainage conditions and groundwater levels may occur at other times of the year which are higher than were recorded during this investigation.

Any site drawings provided in this Report are preliminary and used to present the general relative locations of features on, and surrounding, the Site.

