

**WILLIAMS HOMES (BALA) LTD**

**PLOTS 1, 2, 3 TABOR HILL, COEDPOETH, WREXHAM**  
**PHASE 4 -EARTHWORKS VERIFICATION REPORT**

**REPORT No. E1116.P4.VER.R1**  
**MAY 2019**



**Client :** WILLIAMS HOMES (BALA) LTD

**Project Title :** PLOTS 1, 2, 3 TABOR HILL, COEDPOETH, WREXHAM

**Document Title:** PHASE 4 – EARTHWORKS VERIFICATION REPORT

**Project No.** E1116  
**Report No.** E1116.P4.VER.R1  
**Date.** MAY 2019

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**Distribution:** WILLIAMS HOMES (BALA) LTD

|                     |                   |  |                                                                                       |
|---------------------|-------------------|--|---------------------------------------------------------------------------------------|
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| <b>Checked by:</b>  |                   |  |                                                                                       |
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| <b>Signed:</b>      |                   |  |                                                                                       |

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## **1. INTRODUCTION.**

### **1.1 Background and Terms of Reference**

- 1.1.1 Williams Homes (Bala) Ltd have instructed e-geo Solutions Ltd to prepare an Earthworks Validation Report at a development site known as Plots 1, 2 and 3 Tabor Hill, Coedpoeth, Wrexham. The site has been redeveloped with three semi-detached residential properties and associated gardens, parking and access road.
- 1.1.2 During development of the site, ground was excavated to reduce levels and materials imported to restore ground levels in garden areas.
- 1.1.3 The objective of this Verification Report is to demonstrate and confirm that following the ground excavation and replacement that the site is 'fit for use' for residential purposes.
- 1.1.4 This report presents details and evidence of the works carried out and confirmatory analysis of samples of imported materials used in the earthworks works.
- 1.1.5 The report has been prepared by e-geo Solutions Ltd for the sole use of the Client, for the purposes described and no extended duty of care applies to other parties. The comments given, and opinions expressed are based on the information collated from site observations and the analysis of samples, however there may be outstanding information and data which becomes available at a later date which has an impact on the overall conclusions.
- 1.1.6 The copyright of this report and its contents prepared by e-geo Solutions Ltd is solely owned by e-geo Solutions Ltd. Neither this report nor contents prepared by e-geo Solutions Ltd may be reproduced, published or adapted without the express written approval of e-geo Solutions Ltd.

### **1.2 Site Location**

- 1.2.1 The development site is located on Tabor Hill off Heol Maelor Road in Coedpoeth, Wrexham. The site location is shown on Figure 1 and is centred at National Grid Reference SJ 28399 50995.
- 1.2.2 To the north and west there is residential development. To the south is a tennis court and east there is a school playing field.
- 1.2.3 This report relates to development Plots 1, 2, 3 as shown on Figure 2.

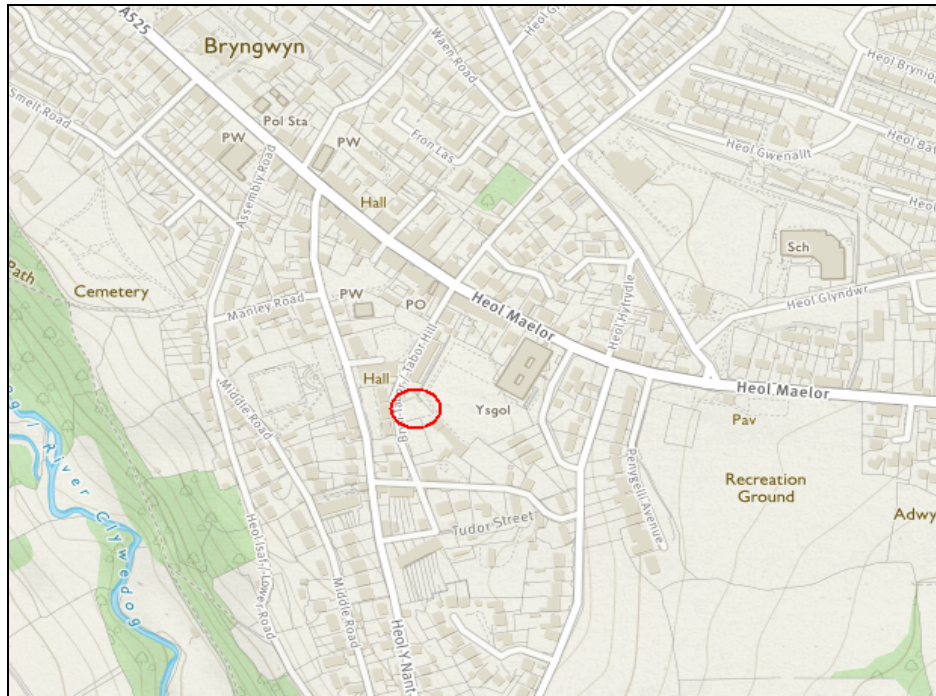


Figure 1 – Site Location

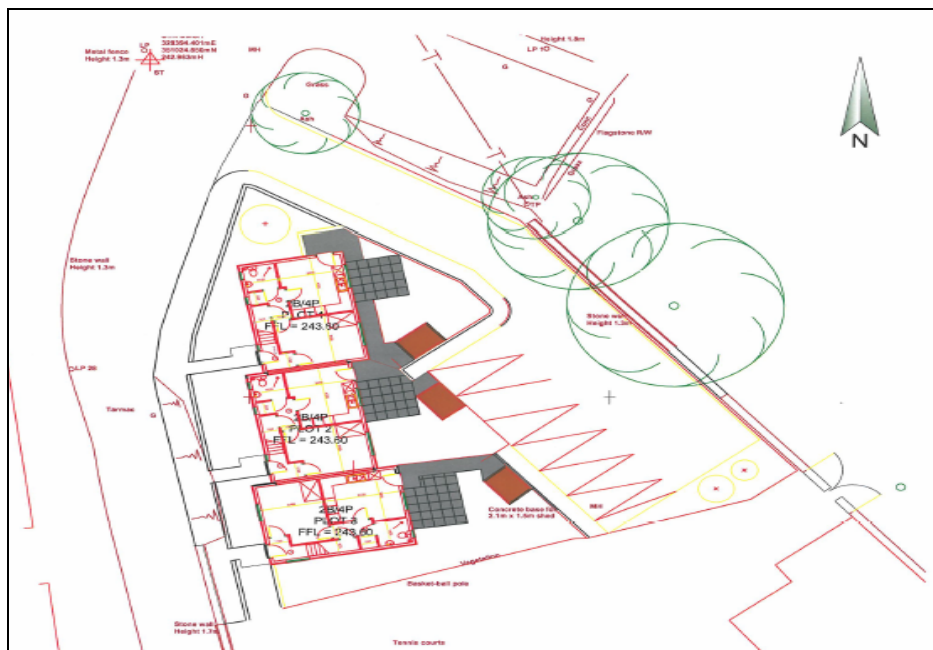


Figure 2 Site Layout Plan

## **2. SITE CHARACTERISTICS**

### **2.1 Original Site Description and Topography**

- 2.1.1 Part of the site was originally occupied by a school building prior to the building being demolished. The ground within the area was generally flat and level and at a similar elevation to surrounding ground.

### **2.2 Ground and Groundwater Conditions**

- 2.2.1 The results of a previous ground investigation in September 2018 and reported in a report titled, 'Tabor Hill, Coedpoeth – Geotechnical Design Report Rev B by Datrys indicated that the ground strata profile comprised a thin layer of 'fill' underlain by glacial clay and then sand and gravel assumed to be weather bedrock.
- 2.2.2 No groundwater was encountered.

### **2.3 Site Contamination**

- 2.3.1 Chemical analysis of ground samples collected during the previous investigation, and targeted at the reduced level following regarding, confirmed that there were no elevated concentrations of chemical parameters with the ground strata and that there was no risk to users of the proposed development.

### **3. EARTHWORKS STRATEGY.**

#### **3.1 Site Conceptual Model and Risks**

- 3.1.1 No elevated concentrations of chemical parameters were detected in the ground materials at the site and there were no identified risks to the development or site users.

#### **3.2 Earthworks Objectives**

- 3.2.1 No specific site remediation was required as no contamination or risks were identified during previous investigation stages. However ground excavation and disposal and importation of backfill soils was required.

#### **3.3 Earthworks Approach**

- 3.3.1 Although no remediation to address site contamination was required at the site, earthworks were undertaken at the site to achieve the required site levels and allow the development to proceed. The proposed earthworks involved:
- Excavation of ground to a depth of 600mm
  - Import of uncontaminated natural stone to raise site levels and application of topsoil within garden areas” to achieve a total thickness of 600mm

#### **4. EARTHWORKS.**

##### **4.1 Earthworks Undertaken**

4.1.1 The various aspects of the earthworks undertaken at the site were as follows:

- Excavation of ground materials to a depth of 600mm and off-site disposal of excavated soils
- Importation of stone and topsoil to restore site levels in garden areas

##### **4.2 Imported materials in Garden Areas at Plots 1, 2, 3**

4.2.1 The imported materials layer is made up of 300mm thickness of imported granular 6F5, 150mm thickness of MOT Type 2, both of which are uncontaminated natural stone and 150mm of imported topsoil which together achieve a total placed thickness of 600mm.

4.2.2 Trial pits were excavated through the topsoil and imported stone layer in the garden areas to prove the thickness was 600mm. Photographic evidence is presented below:



Plate 1 – Trial pit in garden area Plot 3



Plate 2 – Trial pit in garden area Plot 1



Plate 3 – Barrier layer depth 620mm

#### 4.3 Source and Analysis of Imported Soils

- 4.3.1 The imported layer of granular 6F5 and MOT Type 2 and topsoil material were imported from P.M Dromgoole and Sons Agricultural Ltd for use on the site.
- 4.3.2 The original source of the topsoil is not known. Limited chemical analysis results on samples of the topsoil prior to importation are presented in Appendix 1 and the findings summarized below:

The results show:

The pH of 7.2

Phytotoxic metals copper, nickel, zinc are below the guideline concentrations

No visible contaminants

#### 4.4 Analysis of Placed Imported Soils

- 4.4.1 Natural stone as granular 6F5 and MOT Type 2 materials and topsoil were imported to the site for to raise site levels and placed in the front, side and rear garden areas of Plots 1,2 and 3 to a depth of at least 600mm. Samples of topsoil were collected from Plot 1, 2 and 3 following placement and submitted for chemical analysis. The results of the chemical analytical are presented in Appendix 2. A summary of the results is presented below.
- 4.4.2 The analytical results have been assessed against human health guideline values (CVs) from the CLEA Soil Guideline Values published by the Environment Agency and the LQM/CIEH Generic Assessment Criteria. The analytical reports on the soil samples when compared to the screening values indicate the following:
- The concentrations of toxic metals lead, arsenic cadmium, mercury, selenium, and chromium are below the respective guidelines concentrations for residential end use
  - The concentrations of phytotoxic metals copper, nickel and zinc are not elevated and would not present risk to vegetation growth or human health
  - Cyanide and phenol concentrations are extremely low or below detection limits
  - Sulphide, sulphur and sulphate concentrations are very low or below detection limits
  - The pH is 7.18 to 7.42 and neutral to alkaline
  - The PAH concentrations and speciated fractions are exceedingly low or below the detection limits
  - TPH fraction concentrations are below detection limits
  - No asbestos was detected.

#### **4.5 Ground Excavation and Disposal**

- 4.5.1 To allow the development to be constructed at the required level ground materials were excavated from across the site. Photographic evidence is provided below.



Plate 4 – Ground Excavation

- 4.5.2 The excavated soils were disposed of off-site by P.M Dromgoole and Sons Agricultural Ltd. A controlled waste transfer note and relevant invoices are presented in Appendix 3. A result of a WAC test undertaken on the excavated ground material is presented as Appendix 4.

#### **4.6 Backfill and Imported Materials**

- 4.6.1 Suitable uncontaminated stone and soil materials were imported to the site to restore site levels in garden areas. Details of the placement materials and depths are presented in previous report sections with the results of confirmatory chemical analysis presented in Appendix 2

## **5. CONCLUSIONS.**

### **5.1 Conclusion**

- 5.1.1 Earthworks have been carried out at Plots 1, 2 and 3 Tabor Hill, Coedpoeth, Wrexham, to achieve the required site levels and produce a site fit for use.
- 5.1.2 Ground has been excavated to achieve required site levels and the excavated materials disposed of in a controlled and documented method.
- 5.1.3 Imported natural stone aggregate and uncontaminated topsoil has been placed to a depth of at least 600mm in garden areas. Validation testing of topsoil samples has confirmed that the imported topsoil is uncontaminated.

Appendix 1 - Soil Analysis Prior to Placement

# Concept Life Sciences

## Certificate of Analysis

Hadfield House  
Hadfield Street  
Cornbrook  
Manchester  
M16 9FE  
Tel : 0161 874 2400  
Fax : 0161 874 2468

**Report Number:** 669430-1

**Date of Report:** 03-Aug-2017

**Customer:** 4 W Environmental Limited  
Unit 26 Redhill House  
Hope Street  
Saltney  
Chester  
CH4 8BU

**Customer Contact:** Mr Martin Womack

**Customer Job Reference:** Topsoil

**Date Job Received at Concept:** 19-Jul-2017

**Date Analysis Started:** 20-Jul-2017

**Date Analysis Completed:** 03-Aug-2017

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with Concept SOPs

All results have been reviewed in accordance with Section 25 of the Concept, Analytical Quality Quality Manual



Report checked  
and authorised by :  
Aleksandra Pacula  
Project Manager

Issued by :  
Aleksandra Pacula  
Project Manager



| <b>Concept Reference:</b> 669430<br><b>Customer Reference:</b> Topsoil<br><br><b>Soil</b> Analysed as Soil<br><b>Phytotoxic Contaminants</b> |               |                    |            |                                 |           |
|----------------------------------------------------------------------------------------------------------------------------------------------|---------------|--------------------|------------|---------------------------------|-----------|
| <b>Concept Reference</b>                                                                                                                     |               |                    |            | <b>669430 001</b>               |           |
| <b>Customer Sample Reference</b>                                                                                                             |               |                    |            | <b>PMD Manufactured Topsoil</b> |           |
| <b>Date Sampled</b>                                                                                                                          |               |                    |            | <b>19-JUL-2017</b>              |           |
| <b>Determinand</b>                                                                                                                           | <b>Method</b> | <b>Test Sample</b> | <b>LOD</b> | <b>Units</b>                    |           |
| Copper                                                                                                                                       | T312          | AR                 | 1          | mg/kg                           | <b>11</b> |
| Nickel                                                                                                                                       | T312          | AR                 | 1          | mg/kg                           | <b>9</b>  |
| Zinc                                                                                                                                         | T312          | AR                 | 1          | mg/kg                           | <b>78</b> |

| <b>Concept Reference:</b> 669430<br><b>Customer Reference:</b> Topsoil<br><br><b>Soil</b> Analysed as Soil<br><b>% Stones</b> |               |                    |            |                                 |            |
|-------------------------------------------------------------------------------------------------------------------------------|---------------|--------------------|------------|---------------------------------|------------|
| <b>Concept Reference</b>                                                                                                      |               |                    |            | <b>669430 001</b>               |            |
| <b>Customer Sample Reference</b>                                                                                              |               |                    |            | <b>PMD Manufactured Topsoil</b> |            |
| <b>Date Sampled</b>                                                                                                           |               |                    |            | <b>19-JUL-2017</b>              |            |
| <b>Determinand</b>                                                                                                            | <b>Method</b> | <b>Test Sample</b> | <b>LOD</b> | <b>Units</b>                    |            |
| Retained on 50mm                                                                                                              | T2            | AR                 | 0.1        | %                               | <0.1       |
| Retained on 20mm                                                                                                              | T2            | AR                 | 0.1        | %                               | <0.1       |
| Retained on 2mm                                                                                                               | T2            | AR                 | 0.1        | %                               | <b>1.5</b> |

| <b>Concept Reference:</b> 669430<br><b>Customer Reference:</b> Topsoil<br><br><b>Soil</b> Analysed as Soil<br><b>BS 3882:2015</b> |               |                    |            |                                 |             |
|-----------------------------------------------------------------------------------------------------------------------------------|---------------|--------------------|------------|---------------------------------|-------------|
| <b>Concept Reference</b>                                                                                                          |               |                    |            | <b>669430 001</b>               |             |
| <b>Customer Sample Reference</b>                                                                                                  |               |                    |            | <b>PMD Manufactured Topsoil</b> |             |
| <b>Date Sampled</b>                                                                                                               |               |                    |            | <b>19-JUL-2017</b>              |             |
| <b>Determinand</b>                                                                                                                | <b>Method</b> | <b>Test Sample</b> | <b>LOD</b> | <b>Units</b>                    |             |
| Clay Content                                                                                                                      | T2            | AR                 | 1.0        | %                               | <b>10</b>   |
| Sand Content                                                                                                                      | T2            | AR                 | 1.0        | %                               | <b>78</b>   |
| Silt Content                                                                                                                      | T2            | AR                 | 1.0        | %                               | <b>12</b>   |
| Carbon / Nitrogen ratio                                                                                                           | T85           | AR                 |            |                                 | Ratio 13:1  |
| Carbonate                                                                                                                         | T22           | AR                 | 0.1        | %                               | <0.1        |
| Dry density                                                                                                                       | T85           | AR                 | 0.1        | g/cm3                           | <b>1.1</b>  |
| Electrical Conductivity                                                                                                           | T7            | A40                | 10         | µS/cm                           | <b>2900</b> |
| LOI (OM) (125-440)C                                                                                                               | T873          | AR                 |            | %                               | <b>4.8</b>  |
| Mg (Extractable BS 3882)                                                                                                          | T272          | AR                 | 10         | mg/l                            | <b>88</b>   |
| Nitrogen (Total)                                                                                                                  | T837          | AR                 | 100        | mg/kg                           | <b>1200</b> |
| pH                                                                                                                                | T7            | A40                |            |                                 | <b>7.2</b>  |
| Extractable P                                                                                                                     | T392          | AR                 | 10         | mg/l                            | <b>14</b>   |
| K (Extractable BS 3882)                                                                                                           | T272          | AR                 | 10         | mg/l                            | <b>180</b>  |
| Total Organic Carbon                                                                                                              | T21           | A40                | 0.1        | %                               | <b>1.6</b>  |
| Visible Contaminants                                                                                                              | T161          | AR                 |            | %                               | N.D.        |

## Index to symbols used in 669430-1

| <b>Value</b> | <b>Description</b>              |
|--------------|---------------------------------|
| A40          | Assisted dried < 40C            |
| AR           | As Received                     |
| N.D.         | Not Detected                    |
| S            | Analysis was subcontracted      |
| U            | Analysis is UKAS accredited     |
| N            | Analysis is not UKAS accredited |

## Notes

Sand/Silt/Clay and Nitrogen was subcontracted to NRM.

## Method Index

| Value | Description                                 |
|-------|---------------------------------------------|
| T85   | Calc                                        |
| T392  | ICP/OES (Sodium Hydrogen Carbonate Extract) |
| T873  | Grav (4 Dec) (Dry 125 C)(Ign 440 C)         |
| T2    | Grav                                        |
| T21   | OX/IR                                       |
| T22   | Titration                                   |
| T272  | ICP/OES (Ammonium Nitrate)                  |
| T837  | CSOP Nut007 (Dumas)                         |
| T7    | Probe                                       |
| T312  | ICP-OES (Nitric Acid Extraction)            |
| T161  | Visual                                      |

## Accreditation Summary

| Determinand              | Method | Test Sample | LOD | Units | Symbol | Concept References |
|--------------------------|--------|-------------|-----|-------|--------|--------------------|
| Clay Content             | T2     | AR          | 1.0 | %     | SN     | 001                |
| Sand Content             | T2     | AR          | 1.0 | %     | SN     | 001                |
| Silt Content             | T2     | AR          | 1.0 | %     | SN     | 001                |
| Carbon / Nitrogen ratio  | T85    | AR          |     |       | N      | 001                |
| Carbonate                | T22    | AR          | 0.1 | %     | N      | 001                |
| Dry density              | T85    | AR          | 0.1 | g/cm3 | N      | 001                |
| Electrical Conductivity  | T7     | A40         | 10  | µS/cm | N      | 001                |
| LOI (OM) (125-440)C      | T873   | AR          |     | %     | N      | 001                |
| Mg (Extractable BS 3882) | T272   | AR          | 10  | mg/l  | N      | 001                |
| Nitrogen (Total)         | T837   | AR          | 100 | mg/kg | N      | 001                |
| pH                       | T7     | A40         |     |       | U      | 001                |
| Extractable P            | T392   | AR          | 10  | mg/l  | N      | 001                |
| K (Extractable BS 3882)  | T272   | AR          | 10  | mg/l  | N      | 001                |
| Total Organic Carbon     | T21    | A40         | 0.1 | %     | N      | 001                |
| Visible Contaminants     | T161   | AR          |     | %     | N      | 001                |
| Retained on 50mm         | T2     | AR          | 0.1 | %     | N      | 001                |
| Retained on 20mm         | T2     | AR          | 0.1 | %     | N      | 001                |
| Retained on 2mm          | T2     | AR          | 0.1 | %     | N      | 001                |
| Copper                   | T312   | AR          | 1   | mg/kg | N      | 001                |
| Nickel                   | T312   | AR          | 1   | mg/kg | N      | 001                |
| Zinc                     | T312   | AR          | 1   | mg/kg | N      | 001                |

Appendix 2                      -                      Soil Analysis of Placed Soils at Plots 1, 2, 3



# Exova Jones Environmental

Registered Office: Exova Environmental UK Limited, 10 Lower Grosvenor Place, London, SW1W 0EN. Reg No. 11371415

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

E-Geo Solutions  
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High Street  
St Asaph  
Denbighshire  
LL17 0UN

Tel: +44 (0) 1244 833780

Fax: +44 (0) 1244 833781



4225



**Attention :** Huw Littler-Jones  
**Date :** 17th May, 2019  
**Your reference :**  
**Our reference :** Test Report 19/7635 Batch 1  
**Location :** T.Hill Coedpoeth  
**Date samples received :** 10th May, 2019  
**Status :** Final report  
**Issue :** 1

Three samples were received for analysis on 10th May, 2019 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.

**Compiled By:**

**Bruce Leslie**  
Project Co-ordinator

Client Name: E-Geo Solutions  
 Reference:  
 Location: T.Hill Coedpoeth  
 Contact: Huw Littler-Jones  
 JE Job No.: 19/7635

Report : Solid

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

| J E Sample No.                                  | 1              | 2              | 3              |  |  |  |  |  |  | Please see attached notes for all abbreviations and acronyms |       |            |
|-------------------------------------------------|----------------|----------------|----------------|--|--|--|--|--|--|--------------------------------------------------------------|-------|------------|
| Sample ID                                       | PLOT1-TP1-0.15 | PLOT2-TP2-0.15 | PLOT3-TP3-0.15 |  |  |  |  |  |  |                                                              |       |            |
| Depth                                           | 0.15           | 0.15           | 0.15           |  |  |  |  |  |  |                                                              |       |            |
| COC No / misc                                   |                |                |                |  |  |  |  |  |  |                                                              |       |            |
| Containers                                      | J              | J              | J              |  |  |  |  |  |  |                                                              |       |            |
| Sample Date                                     | 08/05/2019     | 08/05/2019     | 08/05/2019     |  |  |  |  |  |  |                                                              |       |            |
| Sample Type                                     | Clay           | Clay           | Clay           |  |  |  |  |  |  |                                                              |       |            |
| Batch Number                                    | 1              | 1              | 1              |  |  |  |  |  |  |                                                              |       |            |
| Date of Receipt                                 | 10/05/2019     | 10/05/2019     | 10/05/2019     |  |  |  |  |  |  | LOD/LOR                                                      | Units | Method No. |
| Arsenic <sup>#M</sup>                           | 5.2            | 4.7            | 3.1            |  |  |  |  |  |  | <0.5                                                         | mg/kg | TM30/PM15  |
| Cadmium <sup>#M</sup>                           | 0.5            | 0.5            | 0.1            |  |  |  |  |  |  | <0.1                                                         | mg/kg | TM30/PM15  |
| Chromium <sup>#M</sup>                          | 114.2          | 113.0          | 80.4           |  |  |  |  |  |  | <0.5                                                         | mg/kg | TM30/PM15  |
| Copper <sup>#M</sup>                            | 23             | 18             | 8              |  |  |  |  |  |  | <1                                                           | mg/kg | TM30/PM15  |
| Lead <sup>#M</sup>                              | 44             | 47             | 19             |  |  |  |  |  |  | <5                                                           | mg/kg | TM30/PM15  |
| Mercury <sup>#M</sup>                           | <0.1           | <0.1           | <0.1           |  |  |  |  |  |  | <0.1                                                         | mg/kg | TM30/PM15  |
| Nickel <sup>#M</sup>                            | 21.8           | 17.5           | 11.9           |  |  |  |  |  |  | <0.7                                                         | mg/kg | TM30/PM15  |
| Selenium <sup>#M</sup>                          | <1             | <1             | <1             |  |  |  |  |  |  | <1                                                           | mg/kg | TM30/PM15  |
| Sulphur as S                                    | 0.03           | 0.04           | 0.02           |  |  |  |  |  |  | <0.01                                                        | %     | TM30/PM15  |
| Total Sulphate as SO <sub>4</sub> <sup>#M</sup> | 408            | 475            | 130            |  |  |  |  |  |  | <50                                                          | mg/kg | TM50/PM29  |
| Water Soluble Boron <sup>#M</sup>               | 1.0            | 1.3            | 0.6            |  |  |  |  |  |  | <0.1                                                         | mg/kg | TM74/PM32  |
| Zinc <sup>#M</sup>                              | 186            | 184            | 96             |  |  |  |  |  |  | <5                                                           | mg/kg | TM30/PM15  |
| PAH MS                                          |                |                |                |  |  |  |  |  |  |                                                              |       |            |
| Naphthalene <sup>#M</sup>                       | <0.04          | <0.04          | <0.04          |  |  |  |  |  |  | <0.04                                                        | mg/kg | TM4/PM8    |
| Acenaphthylene                                  | <0.03          | <0.03          | <0.03          |  |  |  |  |  |  | <0.03                                                        | mg/kg | TM4/PM8    |
| Acenaphthene <sup>#M</sup>                      | <0.05          | <0.05          | <0.05          |  |  |  |  |  |  | <0.05                                                        | mg/kg | TM4/PM8    |
| Fluorene <sup>#M</sup>                          | <0.04          | <0.04          | <0.04          |  |  |  |  |  |  | <0.04                                                        | mg/kg | TM4/PM8    |
| Phenanthrene <sup>#M</sup>                      | 0.13           | 0.10           | 0.11           |  |  |  |  |  |  | <0.03                                                        | mg/kg | TM4/PM8    |
| Anthracene <sup>#</sup>                         | <0.04          | <0.04          | <0.04          |  |  |  |  |  |  | <0.04                                                        | mg/kg | TM4/PM8    |
| Fluoranthene <sup>#M</sup>                      | 0.36           | 0.31           | 0.40           |  |  |  |  |  |  | <0.03                                                        | mg/kg | TM4/PM8    |
| Pyrene <sup>#</sup>                             | 0.32           | 0.29           | 0.36           |  |  |  |  |  |  | <0.03                                                        | mg/kg | TM4/PM8    |
| Benzo(a)anthracene <sup>#</sup>                 | 0.21           | 0.21           | 0.23           |  |  |  |  |  |  | <0.06                                                        | mg/kg | TM4/PM8    |
| Chrysene <sup>#M</sup>                          | 0.23           | 0.21           | 0.24           |  |  |  |  |  |  | <0.02                                                        | mg/kg | TM4/PM8    |
| Benzo(bk)fluoranthene <sup>#M</sup>             | 0.38           | 0.69           | 0.41           |  |  |  |  |  |  | <0.07                                                        | mg/kg | TM4/PM8    |
| Benzo(a)pyrene <sup>#</sup>                     | 0.17           | <0.04          | 0.23           |  |  |  |  |  |  | <0.04                                                        | mg/kg | TM4/PM8    |
| Indeno(123cd)pyrene <sup>#M</sup>               | 0.12           | 0.14           | 0.13           |  |  |  |  |  |  | <0.04                                                        | mg/kg | TM4/PM8    |
| Dibenzo(ah)anthracene <sup>#</sup>              | <0.04          | <0.04          | <0.04          |  |  |  |  |  |  | <0.04                                                        | mg/kg | TM4/PM8    |
| Benzo(ghi)perylene <sup>#</sup>                 | 0.13           | 0.13           | 0.13           |  |  |  |  |  |  | <0.04                                                        | mg/kg | TM4/PM8    |
| PAH 16 Total                                    | 2.1            | 2.1            | 2.2            |  |  |  |  |  |  | <0.6                                                         | mg/kg | TM4/PM8    |
| Benzo(b)fluoranthene                            | 0.27           | 0.50           | 0.30           |  |  |  |  |  |  | <0.05                                                        | mg/kg | TM4/PM8    |
| Benzo(k)fluoranthene                            | 0.11           | 0.19           | 0.11           |  |  |  |  |  |  | <0.02                                                        | mg/kg | TM4/PM8    |
| PAH Surrogate % Recovery                        | 104            | 106            | 143            |  |  |  |  |  |  | <0                                                           | %     | TM4/PM8    |
| MTBE <sup>#</sup>                               | <5             | <5             | <5             |  |  |  |  |  |  | <5                                                           | ug/kg | TM31/PM12  |
| Benzene <sup>#</sup>                            | <5             | <5             | <5             |  |  |  |  |  |  | <5                                                           | ug/kg | TM31/PM12  |
| Toluene <sup>#</sup>                            | <5             | <5             | <5             |  |  |  |  |  |  | <5                                                           | ug/kg | TM31/PM12  |
| Ethylbenzene <sup>#</sup>                       | <5             | <5             | <5             |  |  |  |  |  |  | <5                                                           | ug/kg | TM31/PM12  |
| m/p-Xylene <sup>#</sup>                         | <5             | <5             | <5             |  |  |  |  |  |  | <5                                                           | ug/kg | TM31/PM12  |
| o-Xylene <sup>#</sup>                           | <5             | <5             | <5             |  |  |  |  |  |  | <5                                                           | ug/kg | TM31/PM12  |

Client Name: E-Geo Solutions  
 Reference:  
 Location: T.Hill Coedpoeth  
 Contact: Huw Littler-Jones  
 JE Job No.: 19/7635

Report : Solid

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

| J E Sample No.                        | 1              | 2              | 3              |  |  |  |  |  |  |  | Please see attached notes for all abbreviations and acronyms |          |                        |
|---------------------------------------|----------------|----------------|----------------|--|--|--|--|--|--|--|--------------------------------------------------------------|----------|------------------------|
| Sample ID                             | PLOT1-TP1-0.15 | PLOT2-TP2-0.15 | PLOT3-TP3-0.15 |  |  |  |  |  |  |  |                                                              |          |                        |
| Depth                                 | 0.15           | 0.15           | 0.15           |  |  |  |  |  |  |  |                                                              |          |                        |
| COC No / misc                         |                |                |                |  |  |  |  |  |  |  |                                                              |          |                        |
| Containers                            | J              | J              | J              |  |  |  |  |  |  |  |                                                              |          |                        |
| Sample Date                           | 08/05/2019     | 08/05/2019     | 08/05/2019     |  |  |  |  |  |  |  |                                                              |          |                        |
| Sample Type                           | Clay           | Clay           | Clay           |  |  |  |  |  |  |  |                                                              |          |                        |
| Batch Number                          | 1              | 1              | 1              |  |  |  |  |  |  |  |                                                              |          |                        |
| Date of Receipt                       | 10/05/2019     | 10/05/2019     | 10/05/2019     |  |  |  |  |  |  |  | LOD/LOR                                                      | Units    | Method No.             |
| TPH CWG                               |                |                |                |  |  |  |  |  |  |  |                                                              |          |                        |
| Aliphatics                            |                |                |                |  |  |  |  |  |  |  |                                                              |          |                        |
| >C5-C6 <sup>#M</sup>                  | <0.1           | <0.1           | <0.1           |  |  |  |  |  |  |  | <0.1                                                         | mg/kg    | TM36/PM12              |
| >C6-C8 <sup>#M</sup>                  | <0.1           | <0.1           | <0.1           |  |  |  |  |  |  |  | <0.1                                                         | mg/kg    | TM36/PM12              |
| >C8-C10                               | <0.1           | <0.1           | <0.1           |  |  |  |  |  |  |  | <0.1                                                         | mg/kg    | TM36/PM12              |
| >C10-C12 <sup>#M</sup>                | <0.2           | <0.2           | <0.2           |  |  |  |  |  |  |  | <0.2                                                         | mg/kg    | TM5/PM8/PM16           |
| >C12-C16 <sup>#M</sup>                | <4             | <4             | <4             |  |  |  |  |  |  |  | <4                                                           | mg/kg    | TM5/PM8/PM16           |
| >C16-C21 <sup>#M</sup>                | <7             | <7             | <7             |  |  |  |  |  |  |  | <7                                                           | mg/kg    | TM5/PM8/PM16           |
| >C21-C35 <sup>#M</sup>                | <7             | <7             | <7             |  |  |  |  |  |  |  | <7                                                           | mg/kg    | TM5/PM8/PM16           |
| Total aliphatics C5-35                | <19            | <19            | <19            |  |  |  |  |  |  |  | <19                                                          | mg/kg    | TM5/TM36/PM8/PM12/PM16 |
| Aromatics                             |                |                |                |  |  |  |  |  |  |  |                                                              |          |                        |
| >C5-EC7 <sup>#</sup>                  | <0.1           | <0.1           | <0.1           |  |  |  |  |  |  |  | <0.1                                                         | mg/kg    | TM36/PM12              |
| >EC7-EC8 <sup>#</sup>                 | <0.1           | <0.1           | <0.1           |  |  |  |  |  |  |  | <0.1                                                         | mg/kg    | TM36/PM12              |
| >EC8-EC10 <sup>#M</sup>               | <0.1           | <0.1           | <0.1           |  |  |  |  |  |  |  | <0.1                                                         | mg/kg    | TM36/PM12              |
| >EC10-EC12 <sup>#</sup>               | <0.2           | <0.2           | <0.2           |  |  |  |  |  |  |  | <0.2                                                         | mg/kg    | TM5/PM8/PM16           |
| >EC12-EC16 <sup>#</sup>               | <4             | <4             | <4             |  |  |  |  |  |  |  | <4                                                           | mg/kg    | TM5/PM8/PM16           |
| >EC16-EC21 <sup>#</sup>               | <7             | <7             | <7             |  |  |  |  |  |  |  | <7                                                           | mg/kg    | TM5/PM8/PM16           |
| >EC21-EC35 <sup>#</sup>               | <7             | <7             | <7             |  |  |  |  |  |  |  | <7                                                           | mg/kg    | TM5/PM8/PM16           |
| Total aromatics C5-35 <sup>#</sup>    | <19            | <19            | <19            |  |  |  |  |  |  |  | <19                                                          | mg/kg    | TM5/TM36/PM8/PM12/PM16 |
| Total aliphatics and aromatics(C5-35) | <38            | <38            | <38            |  |  |  |  |  |  |  | <38                                                          | mg/kg    | TM5/TM36/PM8/PM12/PM16 |
| Phenol <sup>#M</sup>                  | <0.01          | <0.01          | 0.01           |  |  |  |  |  |  |  | <0.01                                                        | mg/kg    | TM26/PM21              |
| Natural Moisture Content              | 21.6           | 19.2           | 20.3           |  |  |  |  |  |  |  | <0.1                                                         | %        | PM4/PM0                |
| Hexavalent Chromium <sup>#</sup>      | <0.3           | <0.3           | <0.3           |  |  |  |  |  |  |  | <0.3                                                         | mg/kg    | TM38/PM20              |
| Total Cyanide <sup>#M</sup>           | 0.9            | 1.0            | 0.8            |  |  |  |  |  |  |  | <0.5                                                         | mg/kg    | TM89/PM45              |
| Sulphide                              | <10            | <10            | <10            |  |  |  |  |  |  |  | <10                                                          | mg/kg    | TM107/PM119            |
| pH <sup>#M</sup>                      | 7.42           | 7.31           | 7.18           |  |  |  |  |  |  |  | <0.01                                                        | pH units | TM73/PM11              |
| Sample Type                           | Clay           | Clay           | Clay           |  |  |  |  |  |  |  |                                                              | None     | PM13/PM0               |
| Sample Colour                         | Medium Brown   | Medium Brown   | Medium Brown   |  |  |  |  |  |  |  |                                                              | None     | PM13/PM0               |
| Other Items                           | stones, sand   | stones, sand   | stones, sand   |  |  |  |  |  |  |  |                                                              | None     | PM13/PM0               |

|                     |                   |
|---------------------|-------------------|
| <b>Client Name:</b> | E-Geo Solutions   |
| <b>Reference:</b>   |                   |
| <b>Location:</b>    | T.Hill Coedpoeth  |
| <b>Contact:</b>     | Huw Littler-Jones |

**Note:**

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level less than 0.1%, lie outside the scope of our UKAS accreditation.

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

Signed on behalf of Jones Environmental Laboratory:

  
Ryan Butterworth  
Asbestos Team Leader

[illegible]

**Reference:**

**Contact:** Huw Littler-Jones

[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

JE Job No.: 19/7635

### SOILS

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.

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

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

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

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

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.

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.

### 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.

### REPORTS FROM THE SOUTH AFRICA LABORATORY

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

Please include all sections of this report if it is reproduced

**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. |
| ++      | Result outside calibration range, results should be considered as indicative only and are not accredited.  |
| *       | Analysis subcontracted to an Exova Jones Environmental 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                                                                                  |

JE Job No: 19/7635

| 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 and BS1377.                                                             | PM0                              | No preparation is required.                                                                                                                                                                       |                       |                        | AR                                              |                              |
| TM4             | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.                                                                                                               | PM8                              | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.                                                                             |                       |                        | AR                                              | Yes                          |
| TM4             | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs 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                          |
| TM4             | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.                                                                                                               | PM8                              | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.                                                                             | Yes                   | Yes                    | AR                                              | Yes                          |
| TM5             | Modified 8015B 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. | 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             | Modified 8015B 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. | 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                   | 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                          |
| PM13            | A visual examination of the solid sample is carried out to ascertain sample make up, colour and any other inclusions. This is not a geotechnical description.                                              | PM0                              | No preparation is required.                                                                                                                                                                       |                       |                        | AR                                              | No                           |
| TM26            | Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.                                                                                         | PM21                             | As received solid or water samples are extracted in Methanol: Sodium Hydroxide (0.1M NaOH) (60:40) by orbital shaker.                                                                             | Yes                   | Yes                    | AR                                              | Yes                          |

JE Job No: 19/7635

| 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 |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------------------|-------------------------------------------------|------------------------------|
| TM30            | Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009                                                                                                               | 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.                                                                                                                                                                         |                       |                        | AD                                              | Yes                          |
| TM30            | Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009                                                                                                               | 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                   | Yes                    | AD                                              | Yes                          |
| TM31            | Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.                                                                                                                                                               | PM12                             | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.                                                                                                                                                                                                                       | Yes                   |                        | AR                                              | Yes                          |
| TM36            | Modified US EPA method 8015B. 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 can be confirmed using GCMS. | PM12                             | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.                                                                                                                                                                                                                       |                       |                        | AR                                              | Yes                          |
| TM36            | Modified US EPA method 8015B. 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 can be confirmed using GCMS. | PM12                             | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.                                                                                                                                                                                                                       | Yes                   |                        | AR                                              | Yes                          |
| TM36            | Modified US EPA method 8015B. 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 can be confirmed using GCMS. | PM12                             | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.                                                                                                                                                                                                                       | Yes                   | Yes                    | AR                                              | Yes                          |
| TM38            | Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)                                                                    | 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                          |
| TM50            | Acid soluble sulphate (Total Sulphate) analysed by ICP-OES                                                                                                                                                                                                                                | PM29                             | Dried and ground solid sample is boiled with dilute hydrochloric acid, the resulting liquor is then analysed.                                                                                                                                                                                                         | Yes                   | Yes                    | AD                                              | Yes                          |
| TM65            | Asbestos Bulk Identification method based on HSG 248.                                                                                                                                                                                                                                     | PM42                             | Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.                                                                                                                                                                                                  | Yes                   |                        | AR                                              |                              |
| TM73            | Modified US EPA methods 150.1 and 9045D and BS1377:1990. 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                   | Yes                    | AR                                              | No                           |

JE Job No: 19/7635

| 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 |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|---------------------------------------------------------------------------------------------------------------|-----------------------|------------------------|-------------------------------------------------|------------------------------|
| TM74            | Analysis of water soluble boron (20:1 extract) by ICP-OES.                                                                                                                      | PM32                             | Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.                        | Yes                   | Yes                    | AD                                              | Yes                          |
| TM89            | Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis. | PM45                             | As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide and Thiocyanate analysis.  | Yes                   | Yes                    | AR                                              | Yes                          |
| TM107           | Determination of Sulphide/Thiocyanate by Skalar Continuous Flow Analyser                                                                                                        | PM119                            | As received solid samples are extracted with 1M NaOH by orbital shaker for Sulphide and Thiocyanate analysis. |                       |                        | AR                                              | Yes                          |
|                 |                                                                                                                                                                                 |                                  |                                                                                                               |                       |                        |                                                 |                              |
|                 |                                                                                                                                                                                 |                                  |                                                                                                               |                       |                        |                                                 |                              |
|                 |                                                                                                                                                                                 |                                  |                                                                                                               |                       |                        |                                                 |                              |
|                 |                                                                                                                                                                                 |                                  |                                                                                                               |                       |                        |                                                 |                              |
|                 |                                                                                                                                                                                 |                                  |                                                                                                               |                       |                        |                                                 |                              |
|                 |                                                                                                                                                                                 |                                  |                                                                                                               |                       |                        |                                                 |                              |
|                 |                                                                                                                                                                                 |                                  |                                                                                                               |                       |                        |                                                 |                              |
|                 |                                                                                                                                                                                 |                                  |                                                                                                               |                       |                        |                                                 |                              |

**Appendix 3                      -                      Controlled Waste Transfer Note and Invoices**

**P.M. Dromgoole & Sons Agricultural Limited**  
 Broughton Cottage Farm  
 Mold Road  
 Near Chester  
 CH4 0EW  
 Registered in England: 03811200



## Controlled Waste Transfer Note

|                                                                                                                                                         |                                                                 |                                                                |                                                         |                                                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|----------------------------------------------------------------|---------------------------------------------------------|--------------------------------------------------|
| Date / Time<br>21/11/18 -<br>11/12/18.                                                                                                                  |                                                                 | Multiple Transfers<br>From 21/11/18 To 11/12/18.               |                                                         |                                                  |
| Waste Producer <b>WILLIAMS. HOMES.</b>                                                                                                                  |                                                                 |                                                                |                                                         |                                                  |
| Site Address <b>LAND SOUTH OF 14<br/>TABOR HILL, COEDPOETH, WREXHAM<br/>L11 3RU.</b>                                                                    |                                                                 |                                                                |                                                         |                                                  |
| Producer Signature                                                                                                                                      |                                                                 |                                                                |                                                         | SIC2007                                          |
| Description of Waste                                                                                                                                    |                                                                 |                                                                |                                                         |                                                  |
| 17-01-01<br>Concrete <input type="checkbox"/>                                                                                                           | 17-01-02<br>Bricks <input type="checkbox"/>                     | 17-01-03<br>Tiles & Ceramics <input type="checkbox"/>          | Tipper<br>8 wheeler <input type="checkbox"/>            | Builder's Skip<br><input type="checkbox"/>       |
| 17-01-07<br>Mixed Concrete &<br>Brick, Tiles &<br>Ceramics <input type="checkbox"/>                                                                     | 17-03-02<br>Bitumen &<br>Road Planings <input type="checkbox"/> | 17-05-04<br>Soil and Stone <input checked="" type="checkbox"/> | Tipper<br>4 wheeler <input checked="" type="checkbox"/> | Other <input type="checkbox"/><br>Please specify |
| 20-02-02<br>Soil and Stone <input type="checkbox"/>                                                                                                     | Quantity (approx.)<br><b>180T</b>                               |                                                                | Grab<br>8 wheeler <input type="checkbox"/>              |                                                  |
| Waste Carrier <b>P M Dromgoole &amp; Sons Agricultural Limited, Broughton Cottage Farm, CH4 0EW</b>                                                     |                                                                 |                                                                |                                                         |                                                  |
| Licence No. <b>CBDU13593</b>                                                                                                                            |                                                                 |                                                                |                                                         |                                                  |
| Driver's Name <b>KERRY DAVIES.</b>                                                                                                                      |                                                                 |                                                                |                                                         |                                                  |
| Vehicle Reg. <b>V80 PMD</b>                                                                                                                             |                                                                 |                                                                |                                                         |                                                  |
| Waste Recipient <b>P M Dromgoole &amp; Sons Agricultural Limited Permit Ref. EPR/FB3734RP</b>                                                           |                                                                 |                                                                |                                                         |                                                  |
| Address of Recipient <b>P M Dromgoole &amp; Sons Agricultural Limited, Broughton Cottage Farm, CH4 0EW</b>                                              |                                                                 |                                                                |                                                         |                                                  |
| Recipient's Name <b>Mike Dromgoole</b>                                                                                                                  |                                                                 |                                                                |                                                         |                                                  |
| Recipient's Signature                                                |                                                                 |                                                                |                                                         |                                                  |
| We confirm that we have fulfilled our duty to apply the waste hierarchy as required by<br>Regulation 12 of the Waste (England & Wales) Regulations 2011 |                                                                 |                                                                |                                                         |                                                  |

P M Dromgoole & Sons Agricultural Ltd  
Broughton Cottage Farm  
Mold Road  
Broughton  
Flintshire  
CH4 0EW  
Tel : 01244 661441  
Email : pmdromgoole@hotmail.co.uk  
**VAT Reg No:** 159 5996 94

*Signature*

Williams Homes  
Unit 18 - 19  
Enterprise Park  
Bala  
Gwynedd  
LL23 7NL

**INVOICE**

**Page 1**

|                     |            |
|---------------------|------------|
| <b>Invoice No</b>   | 212476     |
| <b>Invoice Date</b> | 20/12/2018 |
| <b>Order No</b>     |            |
| <b>Account Ref</b>  | WILLIAMS   |

**Quantity Description**

**Unit Price Disc Amt**

**Net Amt VAT %**

**VAT**

Date : 18/12/2018

0.00

Site : Llay.

1.00 1 x Full 8 Wheeler Load Soil Away @ £180

180.00

0.00

180.00 20.00

36.00

2.00 2 x 8 Wheeler Load of Soil @ £200

200.00

0.00

400.00 20.00

80.00

*Signature*

*Signature*

**AUTHORISED BY -**

**Date -**

**Deliver To :**

Terms: 30 days from date of invoice  
UTR: 8827803429 Registered Gross  
Company Registration No.: 3811200

**Bank Details:**

Sort Code: 60-40-08 A/c No.: 32511957

**Payment Terms :** 30 days from date of invoice

|                         |   |        |
|-------------------------|---|--------|
| <b>Total Discount</b>   | £ | 0.00   |
| <b>Total Net Amount</b> | £ | 580.00 |
| <b>Carriage Net</b>     | £ | 0.00   |
| <b>Total Tax Amount</b> | £ | 116.00 |
| <b>Invoice Total</b>    | £ | 696.00 |

P M Dromgoole & Sons Agricultural Ltd  
Broughton Cottage Farm  
Mold Road  
Broughton  
Flintshire  
CH4 0EW  
Tel : 01244 661441  
Email : pmdromgoole@hotmail.co.uk  
**VAT Reg No:** 159 5996 94



21 DEC 2018

Williams Homes  
Unit 18 - 19  
Enterprise Park  
Bala  
Gwynedd  
LL23 7NL

**INVOICE**

**Page 1**

|                     |            |
|---------------------|------------|
| <b>Invoice No</b>   | 212458     |
| <b>Invoice Date</b> | 17/12/2018 |
| <b>Order No</b>     |            |
| <b>Account Ref</b>  | WILLIAMS   |

| Quantity | Description                         | Unit Price | Disc Amt | Net Amt | VAT % | VAT    |
|----------|-------------------------------------|------------|----------|---------|-------|--------|
|          | Date : 11/12/2018                   |            | 0.00     |         |       |        |
|          | Site : Coedpoeth.                   |            |          |         |       |        |
| 1.00     | 1 x Load of Top Soil @ £110         | 110.00     | 0.00     | 110.00  | 20.00 | 22.00  |
| 4.00     | 4 x Full Loads of Spoil Away @ £150 | 150.00     | 0.00     | 600.00  | 20.00 | 120.00 |
| 1.00     | 1 x Full Load of 6F5 @ £110         | 110.00     | 0.00     | 110.00  | 20.00 | 22.00  |

0762.



**AUTHORISED BY .**

**Date -**

**Deliver To :**

Terms: 30 days from date of invoice  
UTR: 8827803429 Registered Gross  
Company Registration No.: 3811200

Bank Details:  
Sort Code: 60-40-08 A/c No.: 32511957

**Payment Terms :** 30 days from date of invoice

|                         |   |        |
|-------------------------|---|--------|
| <b>Total Discount</b>   | £ | 0.00   |
| <b>Total Net Amount</b> | £ | 820.00 |
| <b>Carriage Net</b>     | £ | 0.00   |
| <b>Total Tax Amount</b> | £ | 164.00 |
| <b>Invoice Total</b>    | £ | 984.00 |

P M Dromgoole & Sons Agricultural Ltd  
Broughton Cottage Farm  
Mold Road  
Broughton  
Flintshire  
CH4 0EW  
Tel : 01244 661441  
Email : pmdromgoole@hotmail.co.uk  
**VAT Reg No:** 159 5996 94

*Sal*

17 DEC 2018

Williams Homes  
Unit 18 - 19  
Enterprise Park  
Bala  
Gwynedd  
LL23 7NL

**INVOICE**

Page 1

|              |            |
|--------------|------------|
| Invoice No   | 212443     |
| Invoice Date | 11/12/2018 |
| Order No     |            |
| Account Ref  | WILLIAMS   |

| Quantity     | Description                     | Unit Price | Disc Amt | Net Amt | VAT % | VAT    |
|--------------|---------------------------------|------------|----------|---------|-------|--------|
|              | Date : 05/12/2018               |            | 0.00     |         |       |        |
|              | Site : Coedpoeth.               |            |          |         |       |        |
| HTI 1 ✓ 6.00 | 6 x Full Load of 6F5 @ £110     | 110.00     | 0.00     | 660.00  | 20.00 | 132.00 |
| HTI 1 ✓ 6.00 | 6 x Full Load Spoil Away @ £150 | 150.00     | 0.00     | 900.00  | 20.00 | 180.00 |
|              | Date : 06/12/2018               |            | 0.00     |         |       |        |
|              | Site : Coedpoeth.               |            |          |         |       |        |
| ✓ 1.00       | 1 x 11 Tonne MOT @ £181.50      | 181.50     | 0.00     | 181.50  | 20.00 | 36.30  |
| ✓ 2.00       | 2 x Loads of Spoil Away @ £150  | 150.00     | 0.00     | 300.00  | 20.00 | 60.00  |
| ✓ 1.00       | 1 x Load of 6F5 @ £110          | 110.00     | 0.00     | 110.00  | 20.00 | 22.00  |
| ✓ 2.00       | 2 x Loads of 6F5 @ £150         | 150.00     | 0.00     | 300.00  | 20.00 | 60.00  |

*o*

*v*

USED BY -

Date

**Deliver To :**

Terms: 30 days from date of invoice  
UTR: 8827803429 Registered Gross  
Company Registration No.: 3811200

Bank Details:  
Sort Code: 60-40-08 A/c No.: 32511957

**Payment Terms :** 30 days from date of invoice

|                  |   |          |
|------------------|---|----------|
| Total Discount   | £ | 0.00     |
| Total Net Amount | £ | 2,451.50 |
| Carriage Net     | £ | 0.00     |
| Total Tax Amount | £ | 490.30   |
| Invoice Total    | £ | 2,941.80 |

**Appendix 4                      -                      WAC Test Results on Excavated Ground Materials**



# Exova Jones Environmental

Registered Office: Exova Environmental UK Limited, 10 Lower Grosvenor Place, London, SW1W 0EN. Reg No. 11371415

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

E-Geo Solutions  
Oak House  
Groes Lwyd  
Abergele  
LL22 7SU

Tel: +44 (0) 1244 833780

Fax: +44 (0) 1244 833781



|                                |                              |
|--------------------------------|------------------------------|
| <b>Attention :</b>             | Huw Littler-Jones            |
| <b>Date :</b>                  | 26th November, 2018          |
| <b>Your reference :</b>        | Coed Poeth                   |
| <b>Our reference :</b>         | Test Report 18/18460 Batch 1 |
| <b>Location :</b>              | Tabor Coed Poeth             |
| <b>Date samples received :</b> | 15th November, 2018          |
| <b>Status :</b>                | Final report                 |
| <b>Issue :</b>                 | 1                            |

One sample was received for analysis on 15th November, 2018 of which one was 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.

**Compiled By:**

**Phil Sommerton BSc**  
Project Manager

**Client Name:** E-Geo Solutions  
**Reference:** Coed Poeth  
**Location:** Tabor Coed Poeth  
**Contact:** Huw Littler-Jones  
**JE Job No.:** 18/18460

**Report : Solid**

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

|                                     |            |  |  |  |  |  |  |  |  |  |                                                              |       |              |
|-------------------------------------|------------|--|--|--|--|--|--|--|--|--|--------------------------------------------------------------|-------|--------------|
| <b>J E Sample No.</b>               | 1          |  |  |  |  |  |  |  |  |  | Please see attached notes for all abbreviations and acronyms |       |              |
| <b>Sample ID</b>                    | WAC1       |  |  |  |  |  |  |  |  |  |                                                              |       |              |
| <b>Depth</b>                        | 0.30       |  |  |  |  |  |  |  |  |  |                                                              |       |              |
| <b>COC No / misc</b>                |            |  |  |  |  |  |  |  |  |  |                                                              |       |              |
| <b>Containers</b>                   | B          |  |  |  |  |  |  |  |  |  |                                                              |       |              |
| <b>Sample Date</b>                  | 14/11/2018 |  |  |  |  |  |  |  |  |  |                                                              |       |              |
| <b>Sample Type</b>                  | Clay       |  |  |  |  |  |  |  |  |  |                                                              |       |              |
| <b>Batch Number</b>                 | 1          |  |  |  |  |  |  |  |  |  |                                                              |       |              |
| <b>Date of Receipt</b>              | 15/11/2018 |  |  |  |  |  |  |  |  |  | LOD/LOR                                                      | Units | Method No.   |
| PAH MS                              |            |  |  |  |  |  |  |  |  |  |                                                              |       |              |
| Naphthalene <sup>#M</sup>           | <0.04      |  |  |  |  |  |  |  |  |  | <0.04                                                        | mg/kg | TM4/PM8      |
| Acenaphthylene                      | <0.03      |  |  |  |  |  |  |  |  |  | <0.03                                                        | mg/kg | TM4/PM8      |
| Acenaphthene <sup>#M</sup>          | <0.05      |  |  |  |  |  |  |  |  |  | <0.05                                                        | mg/kg | TM4/PM8      |
| Fluorene <sup>#M</sup>              | <0.04      |  |  |  |  |  |  |  |  |  | <0.04                                                        | mg/kg | TM4/PM8      |
| Phenanthrene <sup>#M</sup>          | 0.14       |  |  |  |  |  |  |  |  |  | <0.03                                                        | mg/kg | TM4/PM8      |
| Anthracene <sup>#</sup>             | 0.05       |  |  |  |  |  |  |  |  |  | <0.04                                                        | mg/kg | TM4/PM8      |
| Fluoranthene <sup>#M</sup>          | 0.71       |  |  |  |  |  |  |  |  |  | <0.03                                                        | mg/kg | TM4/PM8      |
| Pyrene <sup>#</sup>                 | 0.64       |  |  |  |  |  |  |  |  |  | <0.03                                                        | mg/kg | TM4/PM8      |
| Benzo(a)anthracene <sup>#</sup>     | 0.40       |  |  |  |  |  |  |  |  |  | <0.06                                                        | mg/kg | TM4/PM8      |
| Chrysene <sup>#M</sup>              | 0.32       |  |  |  |  |  |  |  |  |  | <0.02                                                        | mg/kg | TM4/PM8      |
| Benzo(bk)fluoranthene <sup>#M</sup> | 0.59       |  |  |  |  |  |  |  |  |  | <0.07                                                        | mg/kg | TM4/PM8      |
| Benzo(a)pyrene <sup>#</sup>         | 0.33       |  |  |  |  |  |  |  |  |  | <0.04                                                        | mg/kg | TM4/PM8      |
| Indeno(123cd)pyrene <sup>#M</sup>   | 0.21       |  |  |  |  |  |  |  |  |  | <0.04                                                        | mg/kg | TM4/PM8      |
| Dibenzo(ah)anthracene <sup>#</sup>  | 0.05       |  |  |  |  |  |  |  |  |  | <0.04                                                        | mg/kg | TM4/PM8      |
| Benzo(ghi)perylene <sup>#</sup>     | 0.20       |  |  |  |  |  |  |  |  |  | <0.04                                                        | mg/kg | TM4/PM8      |
| Coronene                            | <0.04      |  |  |  |  |  |  |  |  |  | <0.04                                                        | mg/kg | TM4/PM8      |
| PAH 17 Total                        | 3.64       |  |  |  |  |  |  |  |  |  | <0.64                                                        | mg/kg | TM4/PM8      |
| Benzo(b)fluoranthene                | 0.42       |  |  |  |  |  |  |  |  |  | <0.05                                                        | mg/kg | TM4/PM8      |
| Benzo(k)fluoranthene                | 0.17       |  |  |  |  |  |  |  |  |  | <0.02                                                        | mg/kg | TM4/PM8      |
| PAH Surrogate % Recovery            | 102        |  |  |  |  |  |  |  |  |  | <0                                                           | %     | TM4/PM8      |
| Mineral Oil (C10-C40)               | <30        |  |  |  |  |  |  |  |  |  | <30                                                          | mg/kg | TM5/PM8/PM16 |
| MTBE <sup>#</sup>                   | <5         |  |  |  |  |  |  |  |  |  | <5                                                           | ug/kg | TM31/PM12    |
| Benzene <sup>#</sup>                | <5         |  |  |  |  |  |  |  |  |  | <5                                                           | ug/kg | TM31/PM12    |
| Toluene <sup>#</sup>                | <5         |  |  |  |  |  |  |  |  |  | <5                                                           | ug/kg | TM31/PM12    |
| Ethylbenzene <sup>#</sup>           | <5         |  |  |  |  |  |  |  |  |  | <5                                                           | ug/kg | TM31/PM12    |
| m/p-Xylene <sup>#</sup>             | <5         |  |  |  |  |  |  |  |  |  | <5                                                           | ug/kg | TM31/PM12    |
| o-Xylene <sup>#</sup>               | <5         |  |  |  |  |  |  |  |  |  | <5                                                           | ug/kg | TM31/PM12    |
| PCB 28 <sup>#</sup>                 | <5         |  |  |  |  |  |  |  |  |  | <5                                                           | ug/kg | TM17/PM8     |
| PCB 52 <sup>#</sup>                 | <5         |  |  |  |  |  |  |  |  |  | <5                                                           | ug/kg | TM17/PM8     |
| PCB 101 <sup>#</sup>                | <5         |  |  |  |  |  |  |  |  |  | <5                                                           | ug/kg | TM17/PM8     |
| PCB 118 <sup>#</sup>                | <5         |  |  |  |  |  |  |  |  |  | <5                                                           | ug/kg | TM17/PM8     |
| PCB 138 <sup>#</sup>                | <5         |  |  |  |  |  |  |  |  |  | <5                                                           | ug/kg | TM17/PM8     |
| PCB 153 <sup>#</sup>                | <5         |  |  |  |  |  |  |  |  |  | <5                                                           | ug/kg | TM17/PM8     |
| PCB 180 <sup>#</sup>                | <5         |  |  |  |  |  |  |  |  |  | <5                                                           | ug/kg | TM17/PM8     |
| Total 7 PCBs <sup>#</sup>           | <35        |  |  |  |  |  |  |  |  |  | <35                                                          | ug/kg | TM17/PM8     |
| Natural Moisture Content            | 18.8       |  |  |  |  |  |  |  |  |  | <0.1                                                         | %     | PM4/PM0      |
| Total Organic Carbon <sup>#</sup>   | 1.35       |  |  |  |  |  |  |  |  |  | <0.02                                                        | %     | TM21/PM24    |

Please see attached notes for all abbreviations and acronyms

|                             |                                   |                                              |                                                                                    |
|-----------------------------|-----------------------------------|----------------------------------------------|------------------------------------------------------------------------------------|
| Mass of sample taken (kg)   | -                                 | Moisture Content Ratio (%) =                 | 18.8                                                                               |
| Mass of dry sample (kg) =   | 0.09                              | Dry Matter Content Ratio (%) =               | 84.1                                                                               |
| Particle Size <4mm =        | >95%                              |                                              |                                                                                    |
| JEFL Job No                 | 18/18460                          | Landfill Waste Acceptance<br>Criteria Limits |                                                                                    |
| Sample No                   | 1                                 |                                              |                                                                                    |
| Client Sample No            | WAC1                              |                                              |                                                                                    |
| Depth/Other                 | 0.30                              |                                              |                                                                                    |
| Sample Date                 | 14/11/2018                        |                                              |                                                                                    |
| Batch No                    | 1                                 |                                              |                                                                                    |
| Solid Waste Analysis        |                                   | Inert<br>Waste<br>Landfill                   | Stable<br>Non-reactive<br>Hazardous<br>Waste in Non-<br>Hazardous<br>Landfill      |
| Total Organic Carbon (%)    | 1.35                              | 3                                            | 5                                                                                  |
| Loss on Ignition (%)        | 4.8                               | -                                            | 10                                                                                 |
| Sum of BTEX (mg/kg)         | <0.025                            | 6                                            | -                                                                                  |
| Sum of 7 PCBs (mg/kg)       | <0.035                            | 1                                            | -                                                                                  |
| Mineral Oil (mg/kg)         | <30                               | 500                                          | -                                                                                  |
| PAH Sum of 17(mg/kg)        | 3.64                              | 100                                          | -                                                                                  |
| pH (pH Units)               | 8.49                              | -                                            | >6                                                                                 |
| ANC to pH 7 (mol/kg)        | NDP                               | -                                            | to be evaluated                                                                    |
| ANC to pH 4 (mol/kg)        | 0.05                              | -                                            | to be evaluated                                                                    |
| Eluate Analysis             | 10:1 conc <sup>n</sup><br>leached |                                              | Limit values for compliance<br>leaching test using<br>BS EN 12457-2 at L/S 10 l/kg |
|                             | C <sub>10</sub><br>mg/l           | A <sub>10</sub><br>mg/kg                     |                                                                                    |
| Arsenic                     | <0.0025                           | <0.025                                       | 0.5                                                                                |
| Barium                      | <0.003                            | <0.03                                        | 20                                                                                 |
| Cadmium                     | <0.0005                           | <0.005                                       | 0.04                                                                               |
| Chromium                    | <0.0015                           | <0.015                                       | 0.5                                                                                |
| Copper                      | <0.007                            | <0.07                                        | 2                                                                                  |
| Mercury                     | <0.001                            | <0.01                                        | 0.01                                                                               |
| Molybdenum                  | 0.011                             | 0.11                                         | 0.5                                                                                |
| Nickel                      | <0.002                            | <0.02                                        | 0.4                                                                                |
| Lead                        | <0.005                            | <0.05                                        | 0.5                                                                                |
| Antimony                    | <0.002                            | <0.02                                        | 0.06                                                                               |
| Selenium                    | <0.003                            | <0.03                                        | 0.1                                                                                |
| Zinc                        | <0.003                            | <0.03                                        | 4                                                                                  |
| Chloride                    | <0.3                              | <3                                           | 800                                                                                |
| Fluoride                    | <0.3                              | <3                                           | 10                                                                                 |
| Sulphate as SO <sub>4</sub> | 0.73                              | 7.3                                          | 1000                                                                               |
| Total Dissolved Solids      | 57                                | 570                                          | 4000                                                                               |
| Phenol                      | <0.01                             | <0.1                                         | 1                                                                                  |
| Dissolved Organic Carbon    | 3                                 | 30                                           | 500                                                                                |

**Matrix : Solid**

5 of 10

**Client Name:** E-Geo Solutions  
**Reference:** Coed Poeth  
**Location:** Tabor Coed Poeth  
**Contact:** Huw Littler-Jones

[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

JE Job No.: 18/18460

### SOILS

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.

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

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

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

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

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.

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.

### DEVIATING SAMPLES

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

### SURROGATES

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

### 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.

### REPORTS FROM THE SOUTH AFRICA LABORATORY

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

Please include all sections of this report if it is reproduced

**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. |
| ++      | Result outside calibration range, results should be considered as indicative only and are not accredited.  |
| *       | Analysis subcontracted to an Exova Jones Environmental 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                                                                                  |

JE Job No: 18/18460

| 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 and BS1377.                                                                                                                                                                                          | PM0                              | No preparation is required.                                                                                                                                                                       |                       |                        | AR                                              |                              |
| TM4             | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.                                                                                                                                                                                                                                            | PM8                              | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.                                                                             |                       |                        | AR                                              | Yes                          |
| TM4             | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs 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                          |
| TM4             | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.                                                                                                                                                                                                                                            | PM8                              | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.                                                                             | Yes                   | Yes                    | AR                                              | Yes                          |
| TM5             | Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.                                                                                                                                                                               | 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. |                       |                        | AR                                              | Yes                          |
| PM13            | A visual examination of the solid sample is carried out to ascertain sample make up, colour and any other inclusions. This is not a geotechnical description.                                                                                                                                                                           | PM0                              | No preparation is required.                                                                                                                                                                       |                       |                        | AR                                              |                              |
| TM17            | Modified US EPA method 8270. Determination of specific Polychlorinated Biphenyl congeners 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                          |
| TM20            | Modified BS 1377-3: 1990/USEPA 160.3 Gravimetric determination of Total Dissolved Solids/Total Solids                                                                                                                                                                                                                                   | PM0                              | No preparation is required.                                                                                                                                                                       |                       |                        | AR                                              | Yes                          |
| TM21            | Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO <sub>2</sub> generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4. | PM24                             | Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.                                              | Yes                   |                        | AD                                              | Yes                          |
| TM22            | Modified USEPA 160.4. Gravimetric determination of Loss on Ignition by temperature controlled Muffle Furnace (450°C)                                                                                                                                                                                                                    | PM0                              | No preparation is required.                                                                                                                                                                       | Yes                   |                        | AD                                              | Yes                          |

JE Job No: 18/18460

| 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 |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------------------|-------------------------------------------------|------------------------------|
| TM26            | Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.                                                                                                                                    | PM0                              | No preparation is required.                                                                                                                                                         |                       |                        | AR                                              | Yes                          |
| TM30            | Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009                                                                           | PM17                             | Modified method EN12457-2 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio. | Yes                   |                        | AR                                              | Yes                          |
| TM31            | Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.                                                                                                                           | PM12                             | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.                                                                                     |                       |                        | AR                                              | Yes                          |
| TM31            | Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.                                                                                                                           | PM12                             | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.                                                                                     | Yes                   |                        | AR                                              | Yes                          |
| TM38            | Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)                                | PM0                              | No preparation is required.                                                                                                                                                         | Yes                   |                        | AR                                              | Yes                          |
| TM60            | TC/TOC analysis of Waters by High Temperature Combustion followed by NDIR detection. Based on the following modified standard methods: USEPA 9060, APHA Standard Methods for Examination of Water and Wastewater 5310B, ASTM D 7573, and USEPA 415.1. | PM0                              | No preparation is required.                                                                                                                                                         |                       |                        | AR                                              | Yes                          |
| TM73            | Modified US EPA methods 150.1 and 9045D and BS1377:1990. 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                   | Yes                    | AR                                              | No                           |
| TM77            | Modified DDCE/NTS method 15364:2006. Determination of Acid Neutralization Capacity by Metrohm automated probe analyser.                                                                                                                               | PM0                              | No preparation is required.                                                                                                                                                         |                       |                        | AR                                              | No                           |
| TM173           | Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 340.2                                                                                                                                                                 | PM0                              | No preparation is required.                                                                                                                                                         |                       |                        | AR                                              | Yes                          |
| NONE            | No Method Code                                                                                                                                                                                                                                        | PM4                              | Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.                                      |                       |                        | AR                                              |                              |