

Our Ref: BEK/19661/210920/CGL/P58

20 September 2021

FAO Paul Hunter  
**The Casey Group**  
Rydings Road  
Rochdale  
OL12 9PS

Dear Paul,

**Residential Development at Ilk Street and Alpine Street, Clayton- PLOT 58**

BEK Enviro (BEK) has been commissioned by The Casey Group (CG) to supervise and validate the remediation works required at the above site.

The approved remediation works are detailed in the BEK Report entitled 'Remediation Method Statement' (Report Ref BEK-19661-1 (Rev D)), dated December 2019.

Clean Cover System

The approved remediation requirement comprise the installation of a clean cover system in private gardens and soft landscaped areas as follows:

*'The gardens within Plots 26 to 62 will need to be capped with a minimum of 600 mm of clean suitable soils (minimum 450 mm topsoil overlying 150 mm subsoil). Any soft landscaped areas in the vicinity of Plots 26 to 62 will need to be capped with a minimum of 450 mm of clean suitable soils. Soils used in the capping system will need to be tested and assessed and ensure suitability for use. The soils will be placed on a geo-membrane to act as a marker layer and prevent mixing. Final capping thickness will also need to be validated.'*

To comply with the above recommendations, CG have imported subsoil from Shire Hill Quarry, Glossop. Source testing has been carried out by BEK to confirm suitability (SS-1 to SS-3). Subsoil source test data is presented in Annex A. To ensure consistency, BEK recovered an additional 6 validation samples (VS-SS1 to VS-SS6) of subsoil from the rear garden following formation of the capping layer. There is no formal requirement to test virgin quarried material. However, BEK will maintain a watch brief on the subsoil and take periodic samples at the discretion of our own engineers to ensure visual and chemical consistency of the material.

The topsoil has been sourced the topsoil from Frank O'Gara & Sons from Protos, Ince Marshes in Ellesmere Port. Source test data for the topsoil is presented in Annex A. To ensure consistency, BEK recovered additional validation samples (VS-TS1 to VS-TS7) of topsoil from the rear garden following formation of the capping layer. The most recent results (VS-TS4 to VS-TS7) are included within Annex B.



GEO-ENVIRONMENTAL CONSULTING ENGINEERS

**bEk Enviro Ltd**

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Mitton Road | Whalley | Lancashire | BB7 9YE

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All imported samples recovered by BEK at the Ilk Street and Alpine Street, Clayton site were submitted to the UKAS accredited laboratories of Envirolab and chemically tested for a wide range of potential contaminants of concern. Copies of the chemical test results are presented in Annex B. All available chemical test results have been compared to approved assessment criteria (as presented in the Remediation Strategy) and BEK can confirm that the sub/topsoil is suitable for use in a residential garden.

Following placement of the validated soils by CG, an engineer from BEK carried out spot checks and can confirm that the capping layer for Plot 58 comprises in excess of 600 mm of suitably clean validated soils. The capping soils overly a geotextile membrane at the base. Photographs showing capping thickness are provided within Annex E.

#### Gas Mitigation Measures

In addition to the clean cover system, risks from ground gas have been identified in the north of the site. As such, gas mitigation measures in accordance with Characteristic Situation 2/Amber 1 need to be installed in Plots 42 to 58.

The gas measures recommended will comply with those recommended for 'Amber 1' sites, as described in CIRIA 665. The measures will include an independently validated membrane and passively ventilated sub-floor void. Gas protection measures will be as described in BRE Report 414 and ventilation of the sub-floor will need to facilitate a minimum of one complete volume change per 24 hours.

The sub-floor void and the installation of the membrane has been validated and BEK can confirm the gas measures incorporated into the foundation design of Plot 58 conforms to the specified requirements. The membrane installation was verified by an Engineer from BEK who has attended the Verification of Gas Protection Systems Course delivered by CL:AIRE Training Course.

CG commissioned Reeve-Tec Membranes Limited to install the gas membranes at the site, who have used the Protech GM Super gas membrane which is considered suitable for use. A copy of the data sheet for this membrane is presented in Annex C. The completed gas validation proforma for this plot is presented in Annex D and validation photographs are presented in Annex E.

BEK can confirm that the remediation works required for Plot 58 at the Residential Development at Ilk Street, Clayton have been completed in accordance with the approved methodology.

I trust the above is satisfactory. Should you require anything further please do not hesitate to contact the undersigned.

Yours sincerely

**MICHAEL BUCKLEY**

*BSc (Hons) MSc MEnvSci CEnv*

## ANNEX A

### Source Test Data

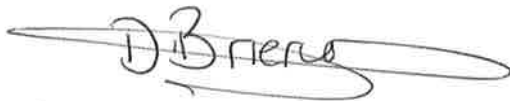
## FINAL ANALYTICAL TEST REPORT

**Envirolab Job Number:** 21/00719  
**Issue Number:** 1  
**Date:** 03 February, 2021

**Client:** BEK Enviro Ltd  
Suite One  
No 3 Mitton Road Business Park  
Mitton Road  
Whalley  
Lancashire  
BB7 9YE

**Project Manager:** Mick Buckley  
**Project Name:** Shire Hill Quarry - Source Test Data - Subsoil  
**Project Ref:** Not specified  
**Order No:** 6981/20685/J  
**Date Samples Received:** 26/01/21  
**Date Instructions Received:** 26/01/21  
**Date Analysis Completed:** 03/02/21

**Prepared by:**



Danielle Brierley  
Client Manager

**Approved by:**



Holly Neary-King  
Client Services Supervisor

Envirolab Job Number: 21/00719

Client Project Name: Shire Hill Quarry - Source Test Data - Subsoil

Client Project Ref: Not specified

| Lab Sample ID                                       | 21/00719/1 | 21/00719/2 | 21/00719/3 |  |  |  |  | Units | Limit of Detection | Method ref  |
|-----------------------------------------------------|------------|------------|------------|--|--|--|--|-------|--------------------|-------------|
| Client Sample No                                    |            |            |            |  |  |  |  |       |                    |             |
| Client Sample ID                                    | SS-1       | SS-2       | SS-3       |  |  |  |  |       |                    |             |
| Depth to Top                                        |            |            |            |  |  |  |  |       |                    |             |
| Depth To Bottom                                     |            |            |            |  |  |  |  |       |                    |             |
| Date Sampled                                        | 26-Jan-21  | 26-Jan-21  | 26-Jan-21  |  |  |  |  |       |                    |             |
| Sample Type                                         | Soil       | Soil       | Soil       |  |  |  |  |       |                    |             |
| Sample Matrix Code                                  | 2A         | 4A         | 4A         |  |  |  |  |       |                    |             |
| % Stones >10mm <sub>A</sub>                         | 28.3       | 26.8       | 25.0       |  |  |  |  | % w/w | 0.1                | A-T-044     |
| pH <sub>D</sub> <sup>M#</sup>                       | 5.36       | 5.27       | 6.01       |  |  |  |  | pH    | 0.01               | A-T-031s    |
| Sulphate (water sol 2:1) <sub>D</sub> <sup>M#</sup> | <0.01      | 0.02       | <0.01      |  |  |  |  | g/l   | 0.01               | A-T-026s    |
| Sulphate (acid soluble) <sub>D</sub> <sup>M#</sup>  | <200       | <200       | <200       |  |  |  |  | mg/kg | 200                | A-T-028s    |
| Cyanide (total) <sub>A</sub> <sup>M#</sup>          | <1         | <1         | <1         |  |  |  |  | mg/kg | 1                  | A-T-042sTCN |
| Phenols - Total by HPLC <sub>A</sub>                | <0.2       | <0.2       | <0.2       |  |  |  |  | mg/kg | 0.2                | A-T-050s    |
| Organic matter <sub>D</sub> <sup>M#</sup>           | 0.4        | 0.4        | 0.5        |  |  |  |  | % w/w | 0.1                | A-T-032 OM  |
| Arsenic <sub>D</sub> <sup>M#</sup>                  | <1         | <1         | <1         |  |  |  |  | mg/kg | 1                  | A-T-024s    |
| Boron (water soluble) <sub>D</sub>                  | <1.0       | <1.0       | <1.0       |  |  |  |  | mg/kg | 1                  | A-T-027s    |
| Cadmium <sub>D</sub> <sup>M#</sup>                  | <0.5       | <0.5       | <0.5       |  |  |  |  | mg/kg | 0.5                | A-T-024s    |
| Copper <sub>D</sub> <sup>M#</sup>                   | 2          | 1          | 4          |  |  |  |  | mg/kg | 1                  | A-T-024s    |
| Chromium <sub>D</sub> <sup>M#</sup>                 | 13         | 12         | 14         |  |  |  |  | mg/kg | 1                  | A-T-024s    |
| Chromium (hexavalent) <sub>D</sub>                  | <1         | <1         | <1         |  |  |  |  | mg/kg | 1                  | A-T-040s    |
| Lead <sub>D</sub> <sup>M#</sup>                     | 7          | 7          | 8          |  |  |  |  | mg/kg | 1                  | A-T-024s    |
| Mercury <sub>D</sub>                                | <0.17      | <0.17      | <0.17      |  |  |  |  | mg/kg | 0.17               | A-T-024s    |
| Nickel <sub>D</sub> <sup>M#</sup>                   | 13         | 12         | 15         |  |  |  |  | mg/kg | 1                  | A-T-024s    |
| Selenium <sub>D</sub> <sup>M#</sup>                 | <1         | <1         | <1         |  |  |  |  | mg/kg | 1                  | A-T-024s    |
| Zinc <sub>D</sub> <sup>M#</sup>                     | 45         | 42         | 47         |  |  |  |  | mg/kg | 5                  | A-T-024s    |

Envirolab Job Number: 21/00719

Client Project Name: Shire Hill Quarry - Source Test Data - Subsoil

Client Project Ref: Not specified

| Lab Sample ID                                    | 21/00719/1 | 21/00719/2 | 21/00719/3 |  |  |  |  | Units | Limit of Detection | Method ref |
|--------------------------------------------------|------------|------------|------------|--|--|--|--|-------|--------------------|------------|
| Client Sample No                                 |            |            |            |  |  |  |  |       |                    |            |
| Client Sample ID                                 | SS-1       | SS-2       | SS-3       |  |  |  |  |       |                    |            |
| Depth to Top                                     |            |            |            |  |  |  |  |       |                    |            |
| Depth To Bottom                                  |            |            |            |  |  |  |  |       |                    |            |
| Date Sampled                                     | 26-Jan-21  | 26-Jan-21  | 26-Jan-21  |  |  |  |  |       |                    |            |
| Sample Type                                      | Soil       | Soil       | Soil       |  |  |  |  |       |                    |            |
| Sample Matrix Code                               | 2A         | 4A         | 4A         |  |  |  |  |       |                    |            |
| <b>PAH-16MS</b>                                  |            |            |            |  |  |  |  |       |                    |            |
| Acenaphthene <sub>A</sub> <sup>M#</sup>          | <0.01      | <0.01      | <0.01      |  |  |  |  | mg/kg | 0.01               | A-T-019s   |
| Acenaphthylene <sub>A</sub> <sup>M#</sup>        | <0.01      | <0.01      | <0.01      |  |  |  |  | mg/kg | 0.01               | A-T-019s   |
| Anthracene <sub>A</sub> <sup>M#</sup>            | <0.02      | <0.02      | <0.02      |  |  |  |  | mg/kg | 0.02               | A-T-019s   |
| Benzo(a)anthracene <sub>A</sub> <sup>M#</sup>    | <0.04      | <0.04      | <0.04      |  |  |  |  | mg/kg | 0.04               | A-T-019s   |
| Benzo(a)pyrene <sub>A</sub> <sup>M#</sup>        | <0.04      | <0.04      | 0.04       |  |  |  |  | mg/kg | 0.04               | A-T-019s   |
| Benzo(b)fluoranthene <sub>A</sub> <sup>M#</sup>  | <0.05      | <0.05      | <0.05      |  |  |  |  | mg/kg | 0.05               | A-T-019s   |
| Benzo(ghi)perylene <sub>A</sub> <sup>M#</sup>    | <0.05      | <0.05      | <0.05      |  |  |  |  | mg/kg | 0.05               | A-T-019s   |
| Benzo(k)fluoranthene <sub>A</sub> <sup>M#</sup>  | <0.07      | <0.07      | <0.07      |  |  |  |  | mg/kg | 0.07               | A-T-019s   |
| Chrysene <sub>A</sub> <sup>M#</sup>              | <0.06      | <0.06      | <0.06      |  |  |  |  | mg/kg | 0.06               | A-T-019s   |
| Dibenzo(ah)anthracene <sub>A</sub> <sup>M#</sup> | <0.04      | <0.04      | <0.04      |  |  |  |  | mg/kg | 0.04               | A-T-019s   |
| Fluoranthene <sub>A</sub> <sup>M#</sup>          | <0.08      | <0.08      | <0.08      |  |  |  |  | mg/kg | 0.08               | A-T-019s   |
| Fluorene <sub>A</sub> <sup>M#</sup>              | <0.01      | <0.01      | <0.01      |  |  |  |  | mg/kg | 0.01               | A-T-019s   |
| Indeno(123-cd)pyrene <sub>A</sub> <sup>M#</sup>  | <0.03      | <0.03      | <0.03      |  |  |  |  | mg/kg | 0.03               | A-T-019s   |
| Naphthalene <sub>A</sub> <sup>M#</sup>           | <0.03      | <0.03      | <0.03      |  |  |  |  | mg/kg | 0.03               | A-T-019s   |
| Phenanthrene <sub>A</sub> <sup>M#</sup>          | <0.03      | <0.03      | 0.03       |  |  |  |  | mg/kg | 0.03               | A-T-019s   |
| Pyrene <sub>A</sub> <sup>M#</sup>                | <0.07      | <0.07      | <0.07      |  |  |  |  | mg/kg | 0.07               | A-T-019s   |
| Total PAH-16MS <sub>A</sub> <sup>M#</sup>        | <0.08      | <0.08      | <0.08      |  |  |  |  | mg/kg | 0.01               | A-T-019s   |

## **REPORT NOTES**

### **General**

This report shall not be reproduced, except in full, without written approval from Envirolab.

The results reported herein relate only to the material supplied to the laboratory.

The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.

Analytical results reflect the quality of the sample at the time of analysis only.

Opinions and interpretations expressed are outside the scope of our accreditation.

If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.

A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

### **Soil chemical analysis:**

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.

For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any "A" subscripts

All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

### **TPH analysis of water by method A-T-007:**

Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

### **Electrical Conductivity of water by Method A-T-037:**

Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

### **Asbestos:**

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.

Stones etc. are not removed from the sample prior to analysis.

Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

### **Predominant Matrix Codes:**

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.

Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.

### **Secondary Matrix Codes:**

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,

E = contains roots/twigs.

### **Key:**

IS indicates Insufficient Sample for analysis.

US indicates Unsuitable Sample for analysis.

NDP indicates No Determination Possible.

NAD indicates No Asbestos Detected.

N/A indicates Not Applicable.

Superscript # indicates method accredited to ISO 17025.

Superscript "M" indicates method accredited to MCERTS.

Subscript "A" indicates analysis performed on the sample as received.

Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

## Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR  
Tel. 0161 368 4921 email. ask@envlab.co.uk

|                            |                                                                                                              |                                    |                 |
|----------------------------|--------------------------------------------------------------------------------------------------------------|------------------------------------|-----------------|
| <b>Client:</b>             | BEK Enviro Ltd, Suite One , No 3 Mitton Road Business Park , Mitton Road ,<br>Whalley , Lancashire , BB7 9YE | <b>Project No:</b>                 | 21/00719        |
| <b>Project:</b>            | Shire Hill Quarry - Source Test Data - Subsoil                                                               | <b>Date Received:</b>              | 26/01/2021 (am) |
| <b>Clients Project No:</b> |                                                                                                              | <b>Cool Box Temperatures (°C):</b> | 5.4             |

### NO DEVIATIONS IDENTIFIED

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

## FINAL ANALYTICAL TEST REPORT

**Envirolab Job Number:** 21/04268  
**Issue Number:** 1  
**Date:** 06 May, 2021

**Client:** Frank O'Gara & Sons Ltd,  
Sorby Road,  
Northbank  
Irlam  
Manchester  
UK  
M44 5BA

**Project Manager:** John O'Gara/Keith Lewis  
**Project Name:** Protos, E'Port  
**Project Ref:** N/A  
**Order No:** PP57816  
**Date Samples Received:** 21/04/21  
**Date Instructions Received:** 22/04/21  
**Date Analysis Completed:** 05/05/21

**Prepared by:**



Melanie Marshall  
Laboratory Coordinator

**Approved by:**



Danielle Brierley  
Client Manager

Envirolab Job Number: 21/04268

Client Project Name: Protos, E'Port

Client Project Ref: N/A

| Lab Sample ID                                                 | 21/04268/1 | 21/04268/2 | 21/04268/3 |  |  |  |  | Units | Limit of Detection | Method ref  |
|---------------------------------------------------------------|------------|------------|------------|--|--|--|--|-------|--------------------|-------------|
| Client Sample No                                              |            |            |            |  |  |  |  |       |                    |             |
| Client Sample ID                                              | Topsoil 1  | Topsoil 2  | Topsoil 3  |  |  |  |  |       |                    |             |
| Depth to Top                                                  |            |            |            |  |  |  |  |       |                    |             |
| Depth To Bottom                                               |            |            |            |  |  |  |  |       |                    |             |
| Date Sampled                                                  | 21-Apr-21  | 21-Apr-21  | 21-Apr-21  |  |  |  |  |       |                    |             |
| Sample Type                                                   | Soil - ES  | Soil - ES  | Soil - ES  |  |  |  |  |       |                    |             |
| Sample Matrix Code                                            | 4AE        | 4AE        | 4AE        |  |  |  |  |       |                    |             |
| % Stones >10mm <sub>A</sub>                                   | 3.8        | 7.3        | <0.1       |  |  |  |  | % w/w | 0.1                | A-T-044     |
| pH <sub>D</sub> <sup>M#</sup>                                 | 6.73       | 6.60       | 6.74       |  |  |  |  | pH    | 0.01               | A-T-031s    |
| Ammonia / Ammoniacal Nitrogen as NH <sub>3</sub> <sub>D</sub> | 14.6       | 20.1       | 15.7       |  |  |  |  | mg/kg | 0.24               | A-T-033s    |
| Chloride (water sol 2:1) <sub>D</sub> <sup>M#</sup>           | <10        | <10        | <10        |  |  |  |  | mg/kg | 10                 | A-T-026s    |
| Sulphate (water sol 2:1) <sub>D</sub> <sup>M#</sup>           | <0.01      | <0.01      | <0.01      |  |  |  |  | g/l   | 0.01               | A-T-026s    |
| Sulphate (acid soluble) <sub>D</sub> <sup>M#</sup>            | 340        | 340        | 360        |  |  |  |  | mg/kg | 200                | A-T-028s    |
| Cyanide (free) <sub>A</sub> <sup>M#</sup>                     | <1         | <1         | <1         |  |  |  |  | mg/kg | 1                  | A-T-042sFCN |
| Arsenic <sub>D</sub> <sup>M#</sup>                            | 3          | 3          | 3          |  |  |  |  | mg/kg | 1                  | A-T-024s    |
| Cadmium <sub>D</sub> <sup>M#</sup>                            | <0.5       | <0.5       | <0.5       |  |  |  |  | mg/kg | 0.5                | A-T-024s    |
| Copper <sub>D</sub> <sup>M#</sup>                             | 13         | 12         | 13         |  |  |  |  | mg/kg | 1                  | A-T-024s    |
| Chromium <sub>D</sub> <sup>M#</sup>                           | 15         | 15         | 16         |  |  |  |  | mg/kg | 1                  | A-T-024s    |
| Lead <sub>D</sub> <sup>M#</sup>                               | 26         | 20         | 22         |  |  |  |  | mg/kg | 1                  | A-T-024s    |
| Mercury <sub>D</sub>                                          | <0.17      | <0.17      | <0.17      |  |  |  |  | mg/kg | 0.17               | A-T-024s    |
| Nickel <sub>D</sub> <sup>M#</sup>                             | 11         | 10         | 10         |  |  |  |  | mg/kg | 1                  | A-T-024s    |
| Selenium <sub>D</sub> <sup>M#</sup>                           | <1         | <1         | <1         |  |  |  |  | mg/kg | 1                  | A-T-024s    |
| Zinc <sub>D</sub> <sup>M#</sup>                               | 35         | 32         | 35         |  |  |  |  | mg/kg | 5                  | A-T-024s    |
| TPH total (>C6-C40) <sub>A</sub> <sup>M#</sup>                | 25         | 48         | 59         |  |  |  |  | mg/kg | 10                 | A-T-007s    |

Envirolab Job Number: 21/04268

Client Project Name: Protos, E'Port

Client Project Ref: N/A

|                                                                 |            |            |            |  |  |  |  |       |                    |            |
|-----------------------------------------------------------------|------------|------------|------------|--|--|--|--|-------|--------------------|------------|
| Lab Sample ID                                                   | 21/04268/1 | 21/04268/2 | 21/04268/3 |  |  |  |  | Units | Limit of Detection | Method ref |
| Client Sample No                                                |            |            |            |  |  |  |  |       |                    |            |
| Client Sample ID                                                | Topsoil 1  | Topsoil 2  | Topsoil 3  |  |  |  |  |       |                    |            |
| Depth to Top                                                    |            |            |            |  |  |  |  |       |                    |            |
| Depth To Bottom                                                 |            |            |            |  |  |  |  |       |                    |            |
| Date Sampled                                                    | 21-Apr-21  | 21-Apr-21  | 21-Apr-21  |  |  |  |  |       |                    |            |
| Sample Type                                                     | Soil - ES  | Soil - ES  | Soil - ES  |  |  |  |  |       |                    |            |
| Sample Matrix Code                                              | 4AE        | 4AE        | 4AE        |  |  |  |  |       |                    |            |
| Asbestos in Soil (inc. matrix)                                  |            |            |            |  |  |  |  |       |                    |            |
| Asbestos in soil <sup>#</sup>                                   | NAD        | NAD        | NAD        |  |  |  |  |       |                    | A-T-045    |
| Asbestos ACM - Suitable for Water Absorption Test? <sub>D</sub> | N/A        | N/A        | N/A        |  |  |  |  |       |                    | A-T-045    |

Envirolab Job Number: 21/04268

Client Project Name: Protos, E'Port

Client Project Ref: N/A

| Lab Sample ID                                    | 21/04268/1 | 21/04268/2 | 21/04268/3 |  |  |  |  | Units | Limit of Detection | Method ref |
|--------------------------------------------------|------------|------------|------------|--|--|--|--|-------|--------------------|------------|
| Client Sample No                                 |            |            |            |  |  |  |  |       |                    |            |
| Client Sample ID                                 | Topsoil 1  | Topsoil 2  | Topsoil 3  |  |  |  |  |       |                    |            |
| Depth to Top                                     |            |            |            |  |  |  |  |       |                    |            |
| Depth To Bottom                                  |            |            |            |  |  |  |  |       |                    |            |
| Date Sampled                                     | 21-Apr-21  | 21-Apr-21  | 21-Apr-21  |  |  |  |  |       |                    |            |
| Sample Type                                      | Soil - ES  | Soil - ES  | Soil - ES  |  |  |  |  |       |                    |            |
| Sample Matrix Code                               | 4AE        | 4AE        | 4AE        |  |  |  |  |       |                    |            |
| PAH-16MS                                         |            |            |            |  |  |  |  |       |                    |            |
| Acenaphthene <sub>A</sub> <sup>M#</sup>          | <0.01      | <0.01      | <0.01      |  |  |  |  | mg/kg | 0.01               | A-T-019s   |
| Acenaphthylene <sub>A</sub> <sup>M#</sup>        | <0.01      | <0.01      | <0.01      |  |  |  |  | mg/kg | 0.01               | A-T-019s   |
| Anthracene <sub>A</sub> <sup>M#</sup>            | <0.02      | <0.02      | <0.02      |  |  |  |  | mg/kg | 0.02               | A-T-019s   |
| Benzo(a)anthracene <sub>A</sub> <sup>M#</sup>    | <0.04      | <0.04      | <0.04      |  |  |  |  | mg/kg | 0.04               | A-T-019s   |
| Benzo(a)pyrene <sub>A</sub> <sup>M#</sup>        | <0.04      | <0.04      | <0.04      |  |  |  |  | mg/kg | 0.04               | A-T-019s   |
| Benzo(b)fluoranthene <sub>A</sub> <sup>M#</sup>  | <0.05      | <0.05      | <0.05      |  |  |  |  | mg/kg | 0.05               | A-T-019s   |
| Benzo(ghi)perylene <sub>A</sub> <sup>M#</sup>    | <0.05      | <0.05      | <0.05      |  |  |  |  | mg/kg | 0.05               | A-T-019s   |
| Benzo(k)fluoranthene <sub>A</sub> <sup>M#</sup>  | <0.07      | <0.07      | <0.07      |  |  |  |  | mg/kg | 0.07               | A-T-019s   |
| Chrysene <sub>A</sub> <sup>M#</sup>              | <0.06      | <0.06      | <0.06      |  |  |  |  | mg/kg | 0.06               | A-T-019s   |
| Dibenzo(ah)anthracene <sub>A</sub> <sup>M#</sup> | <0.04      | <0.04      | <0.04      |  |  |  |  | mg/kg | 0.04               | A-T-019s   |
| Fluoranthene <sub>A</sub> <sup>M#</sup>          | <0.08      | <0.08      | <0.08      |  |  |  |  | mg/kg | 0.08               | A-T-019s   |
| Fluorene <sub>A</sub> <sup>M#</sup>              | <0.01      | <0.01      | <0.01      |  |  |  |  | mg/kg | 0.01               | A-T-019s   |
| Indeno(123-cd)pyrene <sub>A</sub> <sup>M#</sup>  | <0.03      | <0.03      | <0.03      |  |  |  |  | mg/kg | 0.03               | A-T-019s   |
| Naphthalene <sub>A</sub> <sup>M#</sup>           | <0.03      | <0.03      | <0.03      |  |  |  |  | mg/kg | 0.03               | A-T-019s   |
| Phenanthrene <sub>A</sub> <sup>M#</sup>          | <0.03      | <0.03      | <0.03      |  |  |  |  | mg/kg | 0.03               | A-T-019s   |
| Pyrene <sub>A</sub> <sup>M#</sup>                | <0.07      | <0.07      | <0.07      |  |  |  |  | mg/kg | 0.07               | A-T-019s   |
| Total PAH-16MS <sub>A</sub> <sup>M#</sup>        | <0.08      | <0.08      | <0.08      |  |  |  |  | mg/kg | 0.01               | A-T-019s   |

## **REPORT NOTES**

### **General**

This report shall not be reproduced, except in full, without written approval from Envirolab.

The results reported herein relate only to the material supplied to the laboratory.

The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.

Analytical results reflect the quality of the sample at the time of analysis only.

Opinions and interpretations expressed are outside the scope of our accreditation.

If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.

A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

### **Soil chemical analysis:**

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.

For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any "A" subscripts

All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

### **TPH analysis of water by method A-T-007:**

Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

### **Electrical Conductivity of water by Method A-T-037:**

Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

### **Asbestos:**

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.

Stones etc. are not removed from the sample prior to analysis.

Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

### **Predominant Matrix Codes:**

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.

Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.

### **Secondary Matrix Codes:**

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,

E = contains roots/twigs.

### **Key:**

IS indicates Insufficient Sample for analysis.

US indicates Unsuitable Sample for analysis.

NDP indicates No Determination Possible.

NAD indicates No Asbestos Detected.

N/A indicates Not Applicable.

Superscript # indicates method accredited to ISO 17025.

Superscript "M" indicates method accredited to MCERTS.

Subscript "A" indicates analysis performed on the sample as received.

Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

## Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR  
Tel. 0161 368 4921 email. ask@envlab.co.uk

|                            |                                                                            |                                    |                 |
|----------------------------|----------------------------------------------------------------------------|------------------------------------|-----------------|
| <b>Client:</b>             | Frank O'Gara & Sons Ltd, Sorby Road, Northbank, Irlam, Manchester, UK, M44 | <b>Project No:</b>                 | 21/04268        |
|                            | 5BA                                                                        | <b>Date Received:</b>              | 22/04/2021 (am) |
| <b>Project:</b>            | Protos, E'Port                                                             | <b>Cool Box Temperatures (°C):</b> | 14.9            |
| <b>Clients Project No:</b> | N/A                                                                        |                                    |                 |

### NO DEVIATIONS IDENTIFIED

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

## ANNEX B

### Validation Chemical Test Results

## FINAL ANALYTICAL TEST REPORT

**Envirolab Job Number:** 21/09690  
**Issue Number:** 1

**Date:** 17 September, 2021

**Client:** BEK Enviro Ltd  
Suite One  
No 3 Mitton Road Business Park  
Mitton Road  
Whalley  
Lancashire  
BB7 9YE

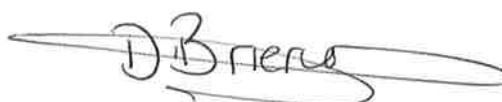
**Project Manager:** Mick Buckley  
**Project Name:** Ilk Street, Clayton  
**Project Ref:** Not specified  
**Order No:** 7221-19661-M  
**Date Samples Received:** 07/09/21  
**Date Instructions Received:** 07/09/21  
**Date Analysis Completed:** 17/09/21

**Prepared by:**



Richard Wong  
Client Manager

**Approved by:**



Danielle Brierley  
Client Manager

Envirolab Job Number: 21/09690

Client Project Name: Ilk Street, Clayton

Client Project Ref: Not specified

| Lab Sample ID                                       | 21/09690/1 | 21/09690/2 | 21/09690/3 | 21/09690/4 | 21/09690/5 | 21/09690/6 |  | Units | Limit of Detection | Method ref  |
|-----------------------------------------------------|------------|------------|------------|------------|------------|------------|--|-------|--------------------|-------------|
| Client Sample No                                    |            |            |            |            |            |            |  |       |                    |             |
| Client Sample ID                                    | VS-SS1     | VS-SS2     | VS-SS3     | VS-SS4     | VS-SS5     | VS-SS6     |  |       |                    |             |
| Depth to Top                                        |            |            |            |            |            |            |  |       |                    |             |
| Depth To Bottom                                     |            |            |            |            |            |            |  |       |                    |             |
| Date Sampled                                        | 06-Sep-21  | 06-Sep-21  | 06-Sep-21  | 06-Sep-21  | 06-Sep-21  | 06-Sep-21  |  |       |                    |             |
| Sample Type                                         | Solid      | Solid      | Solid      | Solid      | Solid      | Solid      |  |       |                    |             |
| Sample Matrix Code                                  | 7          | 7          | 7          | 7          | 7          | 7          |  |       |                    |             |
| % Stones >10mm <sub>A</sub>                         | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |  | % w/w | 0.1                | A-T-044     |
| pH <sub>D</sub> <sup>M#</sup>                       | 7.21       | 6.80       | 6.83       | 6.50       | 6.60       | 6.72       |  | pH    | 0.01               | A-T-031s    |
| Sulphate (water sol 2:1) <sub>D</sub> <sup>M#</sup> | <0.01      | 0.03       | 0.08       | 0.09       | 0.08       | 0.05       |  | g/l   | 0.01               | A-T-026s    |
| Sulphate (acid soluble) <sub>D</sub> <sup>M#</sup>  | 1000       | 850        | 880        | 1100       | 880        | 730        |  | mg/kg | 200                | A-T-028s    |
| Cyanide (total) <sub>A</sub> <sup>M#</sup>          | <1         | <1         | <1         | <1         | <1         | <1         |  | mg/kg | 1                  | A-T-042sTCN |
| Phenols - Total by HPLC <sub>A</sub>                | <0.2       | <0.2       | <0.2       | <0.2       | <0.2       | <0.2       |  | mg/kg | 0.2                | A-T-050s    |
| Organic matter <sub>D</sub> <sup>M#</sup>           | 5.4        | 5.7        | 4.1        | 4.4        | 4.2        | 4.6        |  | % w/w | 0.1                | A-T-032 OM  |
| Arsenic <sub>D</sub> <sup>M#</sup>                  | 6          | 9          | 4          | 2          | 2          | 6          |  | mg/kg | 1                  | A-T-024s    |
| Boron (water soluble) <sub>D</sub>                  | <1.0       | <1.0       | <1.0       | <1.0       | <1.0       | <1.0       |  | mg/kg | 1                  | A-T-027s    |
| Cadmium <sub>D</sub> <sup>M#</sup>                  | 1.6        | 1.4        | 1.3        | 1.3        | 1.4        | 1.4        |  | mg/kg | 0.5                | A-T-024s    |
| Copper <sub>D</sub> <sup>M#</sup>                   | 56         | 51         | 45         | 49         | 52         | 52         |  | mg/kg | 1                  | A-T-024s    |
| Chromium <sub>D</sub> <sup>M#</sup>                 | 28         | 33         | 25         | 26         | 28         | 24         |  | mg/kg | 1                  | A-T-024s    |
| Chromium (hexavalent) <sub>D</sub>                  | <1         | <1         | <1         | <1         | <1         | <1         |  | mg/kg | 1                  | A-T-040s    |
| Lead <sub>D</sub> <sup>M#</sup>                     | 38         | 30         | 27         | 34         | 33         | 29         |  | mg/kg | 1                  | A-T-024s    |
| Mercury <sub>D</sub>                                | <0.17      | <0.17      | <0.17      | <0.17      | <0.17      | <0.17      |  | mg/kg | 0.17               | A-T-024s    |
| Nickel <sub>D</sub> <sup>M#</sup>                   | 51         | 59         | 45         | 47         | 49         | 46         |  | mg/kg | 1                  | A-T-024s    |
| Selenium <sub>D</sub> <sup>M#</sup>                 | <1         | <1         | <1         | <1         | <1         | <1         |  | mg/kg | 1                  | A-T-024s    |
| Zinc <sub>D</sub> <sup>M#</sup>                     | 109        | 119        | 96         | 95         | 98         | 100        |  | mg/kg | 5                  | A-T-024s    |

Envirolab Job Number: 21/09690

Client Project Name: Ilk Street, Clayton

Client Project Ref: Not specified

|                                                                 |            |            |            |            |            |            |  |       |                    |            |
|-----------------------------------------------------------------|------------|------------|------------|------------|------------|------------|--|-------|--------------------|------------|
| Lab Sample ID                                                   | 21/09690/1 | 21/09690/2 | 21/09690/3 | 21/09690/4 | 21/09690/5 | 21/09690/6 |  | Units | Limit of Detection | Method ref |
| Client Sample No                                                |            |            |            |            |            |            |  |       |                    |            |
| Client Sample ID                                                | VS-SS1     | VS-SS2     | VS-SS3     | VS-SS4     | VS-SS5     | VS-SS6     |  |       |                    |            |
| Depth to Top                                                    |            |            |            |            |            |            |  |       |                    |            |
| Depth To Bottom                                                 |            |            |            |            |            |            |  |       |                    |            |
| Date Sampled                                                    | 06-Sep-21  | 06-Sep-21  | 06-Sep-21  | 06-Sep-21  | 06-Sep-21  | 06-Sep-21  |  |       |                    |            |
| Sample Type                                                     | Solid      | Solid      | Solid      | Solid      | Solid      | Solid      |  |       |                    |            |
| Sample Matrix Code                                              | 7          | 7          | 7          | 7          | 7          | 7          |  |       |                    |            |
| Asbestos in Soil (inc. matrix)                                  |            |            |            |            |            |            |  |       |                    |            |
| Asbestos in soil <sup>#</sup>                                   | NAD        | NAD        | NAD        | NAD        | NAD        | NAD        |  |       |                    | A-T-045    |
| Asbestos ACM - Suitable for Water Absorption Test? <sub>D</sub> | N/A        | N/A        | N/A        | N/A        | N/A        | N/A        |  |       |                    | A-T-045    |

Envirolab Job Number: 21/09690

Client Project Name: Ilk Street, Clayton

Client Project Ref: Not specified

| Lab Sample ID                                    | 21/09690/1 | 21/09690/2 | 21/09690/3 | 21/09690/4 | 21/09690/5 | 21/09690/6 |  | Units | Limit of Detection | Method ref |
|--------------------------------------------------|------------|------------|------------|------------|------------|------------|--|-------|--------------------|------------|
| Client Sample No                                 |            |            |            |            |            |            |  |       |                    |            |
| Client Sample ID                                 | VS-SS1     | VS-SS2     | VS-SS3     | VS-SS4     | VS-SS5     | VS-SS6     |  |       |                    |            |
| Depth to Top                                     |            |            |            |            |            |            |  |       |                    |            |
| Depth To Bottom                                  |            |            |            |            |            |            |  |       |                    |            |
| Date Sampled                                     | 06-Sep-21  | 06-Sep-21  | 06-Sep-21  | 06-Sep-21  | 06-Sep-21  | 06-Sep-21  |  |       |                    |            |
| Sample Type                                      | Solid      | Solid      | Solid      | Solid      | Solid      | Solid      |  |       |                    |            |
| Sample Matrix Code                               | 7          | 7          | 7          | 7          | 7          | 7          |  |       |                    |            |
| PAH-16MS                                         |            |            |            |            |            |            |  |       |                    |            |
| Acenaphthene <sub>A</sub> <sup>M#</sup>          | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | 0.02       |  | mg/kg | 0.01               | A-T-019s   |
| Acenaphthylene <sub>A</sub> <sup>M#</sup>        | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      |  | mg/kg | 0.01               | A-T-019s   |
| Anthracene <sub>A</sub> <sup>M#</sup>            | <0.02      | <0.02      | <0.02      | <0.02      | <0.02      | 0.02       |  | mg/kg | 0.02               | A-T-019s   |
| Benzo(a)anthracene <sub>A</sub> <sup>M#</sup>    | <0.04      | <0.04      | <0.04      | <0.04      | <0.04      | 0.15       |  | mg/kg | 0.04               | A-T-019s   |
| Benzo(a)pyrene <sub>A</sub> <sup>M#</sup>        | <0.04      | <0.04      | <0.04      | <0.04      | <0.04      | 0.18       |  | mg/kg | 0.04               | A-T-019s   |
| Benzo(b)fluoranthene <sub>A</sub> <sup>M#</sup>  | <0.05      | <0.05      | <0.05      | <0.05      | <0.05      | 0.18       |  | mg/kg | 0.05               | A-T-019s   |
| Benzo(ghi)perylene <sub>A</sub> <sup>M#</sup>    | <0.05      | <0.05      | <0.05      | <0.05      | <0.05      | 0.09       |  | mg/kg | 0.05               | A-T-019s   |
| Benzo(k)fluoranthene <sub>A</sub> <sup>M#</sup>  | <0.07      | <0.07      | <0.07      | <0.07      | <0.07      | <0.07      |  | mg/kg | 0.07               | A-T-019s   |
| Chrysene <sub>A</sub> <sup>M#</sup>              | <0.06      | <0.06      | <0.06      | <0.06      | <0.06      | 0.20       |  | mg/kg | 0.06               | A-T-019s   |
| Dibenzo(ah)anthracene <sub>A</sub> <sup>M#</sup> | <0.04      | <0.04      | <0.04      | <0.04      | <0.04      | <0.04      |  | mg/kg | 0.04               | A-T-019s   |
| Fluoranthene <sub>A</sub> <sup>M#</sup>          | <0.08      | <0.08      | <0.08      | <0.08      | <0.08      | 0.26       |  | mg/kg | 0.08               | A-T-019s   |
| Fluorene <sub>A</sub> <sup>M#</sup>              | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | 0.01       |  | mg/kg | 0.01               | A-T-019s   |
| Indeno(123-cd)pyrene <sub>A</sub> <sup>M#</sup>  | <0.03      | <0.03      | <0.03      | <0.03      | <0.03      | 0.10       |  | mg/kg | 0.03               | A-T-019s   |
| Naphthalene <sub>A</sub> <sup>M#</sup>           | <0.03      | <0.03      | <0.03      | <0.03      | <0.03      | <0.03      |  | mg/kg | 0.03               | A-T-019s   |
| Phenanthrene <sub>A</sub> <sup>M#</sup>          | 0.08       | 0.07       | 0.06       | 0.06       | 0.06       | 0.13       |  | mg/kg | 0.03               | A-T-019s   |
| Pyrene <sub>A</sub> <sup>M#</sup>                | <0.07      | <0.07      | <0.07      | <0.07      | <0.07      | 0.25       |  | mg/kg | 0.07               | A-T-019s   |
| Total PAH-16MS <sub>A</sub> <sup>M#</sup>        | 0.08       | <0.08      | <0.08      | <0.08      | <0.08      | 1.59       |  | mg/kg | 0.01               | A-T-019s   |

Envirolab Job Number: 21/09690

Client Project Name: Ilk Street, Clayton

Client Project Ref: Not specified

| Lab Sample ID                                  | 21/09690/1 | 21/09690/2 | 21/09690/3 | 21/09690/4 | 21/09690/5 | 21/09690/6 |  | Units | Limit of Detection | Method ref |
|------------------------------------------------|------------|------------|------------|------------|------------|------------|--|-------|--------------------|------------|
| Client Sample No                               |            |            |            |            |            |            |  |       |                    |            |
| Client Sample ID                               | VS-SS1     | VS-SS2     | VS-SS3     | VS-SS4     | VS-SS5     | VS-SS6     |  |       |                    |            |
| Depth to Top                                   |            |            |            |            |            |            |  |       |                    |            |
| Depth To Bottom                                |            |            |            |            |            |            |  |       |                    |            |
| Date Sampled                                   | 06-Sep-21  | 06-Sep-21  | 06-Sep-21  | 06-Sep-21  | 06-Sep-21  | 06-Sep-21  |  |       |                    |            |
| Sample Type                                    | Solid      | Solid      | Solid      | Solid      | Solid      | Solid      |  |       |                    |            |
| Sample Matrix Code                             | 7          | 7          | 7          | 7          | 7          | 7          |  |       |                    |            |
| TPH CWG                                        |            |            |            |            |            |            |  |       |                    |            |
| Ali >C5-C6 <sub>A</sub> <sup>#</sup>           | <0.05      | <0.05      | <0.05      | <0.05      | <0.05      | <0.05      |  | mg/kg | 0.01               | A-T-022s   |
| Ali >C6-C8 <sub>A</sub> <sup>#</sup>           | <0.05      | <0.05      | <0.05      | <0.05      | <0.05      | <0.05      |  | mg/kg | 0.01               | A-T-022s   |
| Ali >C8-C10 <sub>A</sub>                       | 5          | 5          | 4          | 4          | 4          | 2          |  | mg/kg | 1                  | A-T-055s   |
| Ali >C10-C12 <sub>A</sub> <sup>M#</sup>        | 13         | 15         | 14         | 14         | 12         | 5          |  | mg/kg | 1                  | A-T-055s   |
| Ali >C12-C16 <sub>A</sub> <sup>M#</sup>        | 29         | 39         | 34         | 37         | 32         | 13         |  | mg/kg | 1                  | A-T-055s   |
| Ali >C16-C21 <sub>A</sub> <sup>M#</sup>        | 26         | 37         | 32         | 34         | 30         | 10         |  | mg/kg | 1                  | A-T-055s   |
| Ali >C21-C35 <sub>A</sub> <sup>M#</sup>        | 36         | 45         | 44         | 43         | 40         | 20         |  | mg/kg | 1                  | A-T-055s   |
| Total Aliphatics <sub>A</sub>                  | 109        | 140        | 129        | 131        | 119        | 50         |  | mg/kg | 1                  | A-T-055s   |
| Aro >C5-C7 <sub>A</sub> <sup>#</sup>           | <0.05      | <0.05      | <0.05      | <0.05      | <0.05      | <0.05      |  | mg/kg | 0.01               | A-T-022s   |
| Aro >C7-C8 <sub>A</sub> <sup>#</sup>           | <0.05      | <0.05      | <0.05      | <0.05      | <0.05      | <0.05      |  | mg/kg | 0.01               | A-T-022s   |
| Aro >C8-C10 <sub>A</sub>                       | 2          | 2          | 2          | 2          | 2          | 1          |  | mg/kg | 1                  | A-T-055s   |
| Aro >C10-C12 <sub>A</sub>                      | 4          | 4          | 4          | 4          | 3          | 2          |  | mg/kg | 1                  | A-T-055s   |
| Aro >C12-C16 <sub>A</sub>                      | 8          | 10         | 9          | 9          | 8          | 4          |  | mg/kg | 1                  | A-T-055s   |
| Aro >C16-C21 <sub>A</sub> <sup>M#</sup>        | 7          | 9          | 8          | 8          | 7          | 5          |  | mg/kg | 1                  | A-T-055s   |
| Aro >C21-C35 <sub>A</sub> <sup>M#</sup>        | 8          | 12         | 11         | 11         | 10         | 21         |  | mg/kg | 1                  | A-T-055s   |
| Total Aromatics <sub>A</sub>                   | 30         | 38         | 36         | 35         | 31         | 34         |  | mg/kg | 1                  | A-T-055s   |
| TPH (Ali & Aro >C5-C35) <sub>A</sub>           | 140        | 178        | 164        | 166        | 150        | 84         |  | mg/kg | 1                  | A-T-055s   |
| BTEX - Benzene <sub>A</sub> <sup>#</sup>       | <0.05      | <0.05      | <0.05      | <0.05      | <0.05      | <0.05      |  | mg/kg | 0.01               | A-T-022s   |
| BTEX - Toluene <sub>A</sub> <sup>#</sup>       | <0.05      | <0.05      | <0.05      | <0.05      | <0.05      | <0.05      |  | mg/kg | 0.01               | A-T-022s   |
| BTEX - Ethyl Benzene <sub>A</sub> <sup>#</sup> | <0.05      | <0.05      | <0.05      | <0.05      | <0.05      | <0.05      |  | mg/kg | 0.01               | A-T-022s   |
| BTEX - m & p Xylene <sub>A</sub> <sup>#</sup>  | <0.05      | <0.05      | <0.05      | <0.05      | <0.05      | <0.05      |  | mg/kg | 0.01               | A-T-022s   |
| BTEX - o Xylene <sub>A</sub> <sup>#</sup>      | <0.05      | <0.05      | <0.05      | <0.05      | <0.05      | <0.05      |  | mg/kg | 0.01               | A-T-022s   |
| MTBE <sub>A</sub> <sup>#</sup>                 | <0.05      | <0.05      | <0.05      | <0.05      | <0.05      | <0.05      |  | mg/kg | 0.01               | A-T-022s   |

## **REPORT NOTES**

### **General**

This report shall not be reproduced, except in full, without written approval from Envirolab.

The results reported herein relate only to the material supplied to the laboratory.

The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.

Analytical results reflect the quality of the sample at the time of analysis only.

Opinions and interpretations expressed are outside the scope of our accreditation.

If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.

A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

### **Soil chemical analysis:**

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.

For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any "A" subscripts

All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

### **TPH analysis of water by method A-T-007:**

Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

### **Electrical Conductivity of water by Method A-T-037:**

Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

### **Asbestos:**

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.

Stones etc. are not removed from the sample prior to analysis.

Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

### **Predominant Matrix Codes:**

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.

Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.

### **Secondary Matrix Codes:**

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,

E = contains roots/twigs.

### **Key:**

IS indicates Insufficient Sample for analysis.

US indicates Unsuitable Sample for analysis.

NDP indicates No Determination Possible.

NAD indicates No Asbestos Detected.

N/A indicates Not Applicable.

Superscript # indicates method accredited to ISO 17025.

Superscript "M" indicates method accredited to MCERTS.

Subscript "A" indicates analysis performed on the sample as received.

Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

## Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR  
Tel. 0161 368 4921 email. ask@envlab.co.uk

**Client:** BEK Enviro Ltd, Suite One , No 3 Mitton Road Business Park , Mitton Road ,  
Whalley , Lancashire , BB7 9YE

**Project:** Ilk Street, Clayton

**Clients Project No:**

**Project No:** 21/09690

**Date Received:** 07/09/2021 (am)

**Cool Box Temperatures (°C):** 20.6

NO DEVIATIONS IDENTIFIED with respect to sampling dates or containers received.

Note: If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3 (for water samples  $5 \pm 3^{\circ}\text{C}$ ), ISO 18400-105:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

## Envirolab Analysis Dates

| Lab Sample ID          | 21/09690/1 | 21/09690/2 | 21/09690/3 | 21/09690/4 | 21/09690/5 | 21/09690/6 |
|------------------------|------------|------------|------------|------------|------------|------------|
| Client Sample No       |            |            |            |            |            |            |
| Client Sample ID/Depth | VS-SS1     | VS-SS2     | VS-SS3     | VS-SS4     | VS-SS5     | VS-SS6     |
| Date Sampled           | 06/09/21   | 06/09/21   | 06/09/21   | 06/09/21   | 06/09/21   | 06/09/21   |
| A-T-019s               | 14/09/2021 | 14/09/2021 | 14/09/2021 | 14/09/2021 | 14/09/2021 | 14/09/2021 |
| A-T-022s               | 16/09/2021 | 16/09/2021 | 16/09/2021 | 16/09/2021 | 16/09/2021 | 16/09/2021 |
| A-T-024s               | 17/09/2021 | 17/09/2021 | 17/09/2021 | 17/09/2021 | 17/09/2021 | 17/09/2021 |
| A-T-026s               | 16/09/2021 | 16/09/2021 | 16/09/2021 | 16/09/2021 | 16/09/2021 | 16/09/2021 |
| A-T-027s               | 16/09/2021 | 16/09/2021 | 16/09/2021 | 16/09/2021 | 16/09/2021 | 16/09/2021 |
| A-T-028s               | 17/09/2021 | 17/09/2021 | 17/09/2021 | 17/09/2021 | 17/09/2021 | 17/09/2021 |
| A-T-031s               | 16/09/2021 | 16/09/2021 | 16/09/2021 | 16/09/2021 | 16/09/2021 | 16/09/2021 |
| A-T-032 OM             | 16/09/2021 | 16/09/2021 | 16/09/2021 | 16/09/2021 | 16/09/2021 | 16/09/2021 |
| A-T-040s               | 16/09/2021 | 16/09/2021 | 16/09/2021 | 16/09/2021 | 16/09/2021 | 16/09/2021 |
| A-T-042sTCN            | 10/09/2021 | 10/09/2021 | 10/09/2021 | 10/09/2021 | 10/09/2021 | 10/09/2021 |
| A-T-044                | 15/09/2021 | 15/09/2021 | 15/09/2021 | 15/09/2021 | 15/09/2021 | 15/09/2021 |
| A-T-045                | 09/09/2021 | 09/09/2021 | 09/09/2021 | 09/09/2021 | 09/09/2021 | 09/09/2021 |
| A-T-050s               | 11/09/2021 | 11/09/2021 | 11/09/2021 | 11/09/2021 | 11/09/2021 | 11/09/2021 |
| A-T-055s               | 16/09/2021 | 16/09/2021 | 16/09/2021 | 16/09/2021 | 16/09/2021 | 16/09/2021 |

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

**End of Report**

## FINAL ANALYTICAL TEST REPORT

**Envirolab Job Number:** 21/09692  
**Issue Number:** 1

**Date:** 17 September, 2021

**Client:** BEK Enviro Ltd  
Suite One  
No 3 Mitton Road Business Park  
Mitton Road  
Whalley  
Lancashire  
BB7 9YE

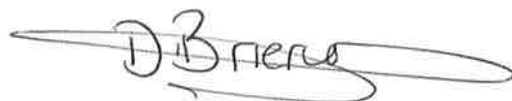
**Project Manager:** Mick Buckley  
**Project Name:** Ilk Street, Clayton  
**Project Ref:** Not specified  
**Order No:** 7220-19661-M  
**Date Samples Received:** 07/09/21  
**Date Instructions Received:** 07/09/21  
**Date Analysis Completed:** 17/09/21

**Prepared by:**



Richard Wong  
Client Manager

**Approved by:**



Danielle Brierley  
Client Manager

Envirolab Job Number: 21/09692

Client Project Name: Ilk Street, Clayton

Client Project Ref: Not specified

| Lab Sample ID                                       | 21/09692/1 | 21/09692/2 | 21/09692/3 | 21/09692/4 |  |  |  | Units | Limit of Detection | Method ref  |
|-----------------------------------------------------|------------|------------|------------|------------|--|--|--|-------|--------------------|-------------|
| Client Sample No                                    |            |            |            |            |  |  |  |       |                    |             |
| Client Sample ID                                    | VS-TS-4    | VS-TS-5    | VS-TS-6    | VS-TS-7    |  |  |  |       |                    |             |
| Depth to Top                                        |            |            |            |            |  |  |  |       |                    |             |
| Depth To Bottom                                     |            |            |            |            |  |  |  |       |                    |             |
| Date Sampled                                        | 06-Sep-21  | 06-Sep-21  | 06-Sep-21  | 06-Sep-21  |  |  |  |       |                    |             |
| Sample Type                                         | Soil       | Soil       | Soil       | Soil       |  |  |  |       |                    |             |
| Sample Matrix Code                                  | 6AE        | 6AE        | 6AE        | 6AE        |  |  |  |       |                    |             |
| % Stones >10mm <sub>A</sub>                         | 8.6        | 1.0        | 3.1        | 0.6        |  |  |  | % w/w | 0.1                | A-T-044     |
| pH <sub>D</sub> <sup>M#</sup>                       | 7.31       | 7.30       | 7.18       | 7.10       |  |  |  | pH    | 0.01               | A-T-031s    |
| Sulphate (water sol 2:1) <sub>D</sub> <sup>M#</sup> | 0.04       | 0.03       | 0.06       | 0.03       |  |  |  | g/l   | 0.01               | A-T-026s    |
| Sulphate (acid soluble) <sub>D</sub> <sup>M#</sup>  | 770        | 910        | 900        | 820        |  |  |  | mg/kg | 200                | A-T-028s    |
| Cyanide (total) <sub>A</sub> <sup>M#</sup>          | <1         | <1         | <1         | <1         |  |  |  | mg/kg | 1                  | A-T-042sTCN |
| Phenols - Total by HPLC <sub>A</sub>                | <0.2       | <0.2       | <0.2       | <0.2       |  |  |  | mg/kg | 0.2                | A-T-050s    |
| Organic matter <sub>D</sub> <sup>M#</sup>           | 8.3        | 9.0        | 8.6        | 7.3        |  |  |  | % w/w | 0.1                | A-T-032 OM  |
| Arsenic <sub>D</sub> <sup>M#</sup>                  | 16         | 15         | 20         | 16         |  |  |  | mg/kg | 1                  | A-T-024s    |
| Boron (water soluble) <sub>D</sub>                  | <1.0       | <1.0       | <1.0       | <1.0       |  |  |  | mg/kg | 1                  | A-T-027s    |
| Cadmium <sub>D</sub> <sup>M#</sup>                  | 0.6        | 0.7        | 0.7        | 0.8        |  |  |  | mg/kg | 0.5                | A-T-024s    |
| Copper <sub>D</sub> <sup>M#</sup>                   | 53         | 56         | 48         | 52         |  |  |  | mg/kg | 1                  | A-T-024s    |
| Chromium <sub>D</sub> <sup>M#</sup>                 | 23         | 23         | 21         | 24         |  |  |  | mg/kg | 1                  | A-T-024s    |
| Chromium (hexavalent) <sub>D</sub>                  | <1         | <1         | <1         | <1         |  |  |  | mg/kg | 1                  | A-T-040s    |
| Lead <sub>D</sub> <sup>M#</sup>                     | 111        | 93         | 83         | 91         |  |  |  | mg/kg | 1                  | A-T-024s    |
| Mercury <sub>D</sub>                                | <0.17      | <0.17      | <0.17      | <0.17      |  |  |  | mg/kg | 0.17               | A-T-024s    |
| Nickel <sub>D</sub> <sup>M#</sup>                   | 19         | 19         | 18         | 21         |  |  |  | mg/kg | 1                  | A-T-024s    |
| Selenium <sub>D</sub> <sup>M#</sup>                 | <1         | <1         | <1         | <1         |  |  |  | mg/kg | 1                  | A-T-024s    |
| Zinc <sub>D</sub> <sup>M#</sup>                     | 91         | 97         | 93         | 118        |  |  |  | mg/kg | 5                  | A-T-024s    |

Envirolab Job Number: 21/09692

Client Project Name: Ilk Street, Clayton

Client Project Ref: Not specified

|                                                                 |            |            |            |            |  |  |  |       |                    |            |
|-----------------------------------------------------------------|------------|------------|------------|------------|--|--|--|-------|--------------------|------------|
| Lab Sample ID                                                   | 21/09692/1 | 21/09692/2 | 21/09692/3 | 21/09692/4 |  |  |  | Units | Limit of Detection | Method ref |
| Client Sample No                                                |            |            |            |            |  |  |  |       |                    |            |
| Client Sample ID                                                | VS-TS-4    | VS-TS-5    | VS-TS-6    | VS-TS-7    |  |  |  |       |                    |            |
| Depth to Top                                                    |            |            |            |            |  |  |  |       |                    |            |
| Depth To Bottom                                                 |            |            |            |            |  |  |  |       |                    |            |
| Date Sampled                                                    | 06-Sep-21  | 06-Sep-21  | 06-Sep-21  | 06-Sep-21  |  |  |  |       |                    |            |
| Sample Type                                                     | Soil       | Soil       | Soil       | Soil       |  |  |  |       |                    |            |
| Sample Matrix Code                                              | 6AE        | 6AE        | 6AE        | 6AE        |  |  |  |       |                    |            |
| Asbestos in Soil (inc. matrix)                                  |            |            |            |            |  |  |  |       |                    |            |
| Asbestos in soil <sup>#</sup>                                   | NAD        | NAD        | NAD        | NAD        |  |  |  |       |                    | A-T-045    |
| Asbestos ACM - Suitable for Water Absorption Test? <sub>D</sub> | N/A        | N/A        | N/A        | N/A        |  |  |  |       |                    | A-T-045    |

Envirolab Job Number: 21/09692

Client Project Name: Ilk Street, Clayton

Client Project Ref: Not specified

| Lab Sample ID                                    | 21/09692/1 | 21/09692/2 | 21/09692/3 | 21/09692/4 |  |  |  | Units | Limit of Detection | Method ref |
|--------------------------------------------------|------------|------------|------------|------------|--|--|--|-------|--------------------|------------|
| Client Sample No                                 |            |            |            |            |  |  |  |       |                    |            |
| Client Sample ID                                 | VS-TS-4    | VS-TS-5    | VS-TS-6    | VS-TS-7    |  |  |  |       |                    |            |
| Depth to Top                                     |            |            |            |            |  |  |  |       |                    |            |
| Depth To Bottom                                  |            |            |            |            |  |  |  |       |                    |            |
| Date Sampled                                     | 06-Sep-21  | 06-Sep-21  | 06-Sep-21  | 06-Sep-21  |  |  |  |       |                    |            |
| Sample Type                                      | Soil       | Soil       | Soil       | Soil       |  |  |  |       |                    |            |
| Sample Matrix Code                               | 6AE        | 6AE        | 6AE        | 6AE        |  |  |  |       |                    |            |
| PAH-16MS                                         |            |            |            |            |  |  |  |       |                    |            |
| Acenaphthene <sub>A</sub> <sup>M#</sup>          | <0.01      | 0.06       | 0.06       | 0.05       |  |  |  | mg/kg | 0.01               | A-T-019s   |
| Acenaphthylene <sub>A</sub> <sup>M#</sup>        | <0.01      | <0.01      | <0.01      | <0.01      |  |  |  | mg/kg | 0.01               | A-T-019s   |
| Anthracene <sub>A</sub> <sup>M#</sup>            | <0.02      | 0.11       | 0.11       | 0.09       |  |  |  | mg/kg | 0.02               | A-T-019s   |
| Benzo(a)anthracene <sub>A</sub> <sup>M#</sup>    | 0.09       | 0.47       | 0.37       | 0.38       |  |  |  | mg/kg | 0.04               | A-T-019s   |
| Benzo(a)pyrene <sub>A</sub> <sup>M#</sup>        | 0.11       | 0.50       | 0.37       | 0.44       |  |  |  | mg/kg | 0.04               | A-T-019s   |
| Benzo(b)fluoranthene <sub>A</sub> <sup>M#</sup>  | 0.13       | 0.54       | 0.41       | 0.47       |  |  |  | mg/kg | 0.05               | A-T-019s   |
| Benzo(ghi)perylene <sub>A</sub> <sup>M#</sup>    | 0.07       | 0.27       | 0.20       | 0.28       |  |  |  | mg/kg | 0.05               | A-T-019s   |
| Benzo(k)fluoranthene <sub>A</sub> <sup>M#</sup>  | <0.07      | 0.22       | 0.16       | 0.18       |  |  |  | mg/kg | 0.07               | A-T-019s   |
| Chrysene <sub>A</sub> <sup>M#</sup>              | 0.13       | 0.55       | 0.42       | 0.48       |  |  |  | mg/kg | 0.06               | A-T-019s   |
| Dibenzo(ah)anthracene <sub>A</sub> <sup>M#</sup> | <0.04      | 0.07       | 0.05       | 0.06       |  |  |  | mg/kg | 0.04               | A-T-019s   |
| Fluoranthene <sub>A</sub> <sup>M#</sup>          | 0.15       | 0.85       | 0.71       | 0.69       |  |  |  | mg/kg | 0.08               | A-T-019s   |
| Fluorene <sub>A</sub> <sup>M#</sup>              | <0.01      | 0.04       | 0.04       | 0.04       |  |  |  | mg/kg | 0.01               | A-T-019s   |
| Indeno(123-cd)pyrene <sub>A</sub> <sup>M#</sup>  | 0.08       | 0.30       | 0.23       | 0.30       |  |  |  | mg/kg | 0.03               | A-T-019s   |
| Naphthalene <sub>A</sub> <sup>M#</sup>           | <0.03      | <0.03      | <0.03      | <0.03      |  |  |  | mg/kg | 0.03               | A-T-019s   |
| Phenanthrene <sub>A</sub> <sup>M#</sup>          | 0.06       | 0.49       | 0.41       | 0.36       |  |  |  | mg/kg | 0.03               | A-T-019s   |
| Pyrene <sub>A</sub> <sup>M#</sup>                | 0.15       | 0.76       | 0.65       | 0.64       |  |  |  | mg/kg | 0.07               | A-T-019s   |
| Total PAH-16MS <sub>A</sub> <sup>M#</sup>        | 0.97       | 5.23       | 4.19       | 4.46       |  |  |  | mg/kg | 0.01               | A-T-019s   |

Envirolab Job Number: 21/09692

Client Project Name: Ilk Street, Clayton

Client Project Ref: Not specified

| Lab Sample ID                                  | 21/09692/1 | 21/09692/2 | 21/09692/3 | 21/09692/4 |  |  |  | Units | Limit of Detection | Method ref |
|------------------------------------------------|------------|------------|------------|------------|--|--|--|-------|--------------------|------------|
| Client Sample No                               |            |            |            |            |  |  |  |       |                    |            |
| Client Sample ID                               | VS-TS-4    | VS-TS-5    | VS-TS-6    | VS-TS-7    |  |  |  |       |                    |            |
| Depth to Top                                   |            |            |            |            |  |  |  |       |                    |            |
| Depth To Bottom                                |            |            |            |            |  |  |  |       |                    |            |
| Date Sampled                                   | 06-Sep-21  | 06-Sep-21  | 06-Sep-21  | 06-Sep-21  |  |  |  |       |                    |            |
| Sample Type                                    | Soil       | Soil       | Soil       | Soil       |  |  |  |       |                    |            |
| Sample Matrix Code                             | 6AE        | 6AE        | 6AE        | 6AE        |  |  |  |       |                    |            |
| TPH CWG                                        |            |            |            |            |  |  |  |       |                    |            |
| Ali >C5-C6 <sub>A</sub> <sup>#</sup>           | <0.01      | <0.01      | <0.01      | <0.01      |  |  |  | mg/kg | 0.01               | A-T-022s   |
| Ali >C6-C8 <sub>A</sub> <sup>#</sup>           | <0.01      | <0.01      | <0.01      | <0.01      |  |  |  | mg/kg | 0.01               | A-T-022s   |
| Ali >C8-C10 <sub>A</sub>                       | <1         | <1         | <1         | <1         |  |  |  | mg/kg | 1                  | A-T-055s   |
| Ali >C10-C12 <sub>A</sub> <sup>M#</sup>        | <1         | <1         | <1         | <1         |  |  |  | mg/kg | 1                  | A-T-055s   |
| Ali >C12-C16 <sub>A</sub> <sup>M#</sup>        | <1         | 1          | <1         | <1         |  |  |  | mg/kg | 1                  | A-T-055s   |
| Ali >C16-C21 <sub>A</sub> <sup>M#</sup>        | <1         | 2          | 2          | 1          |  |  |  | mg/kg | 1                  | A-T-055s   |
| Ali >C21-C35 <sub>A</sub> <sup>M#</sup>        | 9          | 22         | 22         | 20         |  |  |  | mg/kg | 1                  | A-T-055s   |
| Total Aliphatics <sub>A</sub>                  | 9          | 26         | 24         | 21         |  |  |  | mg/kg | 1                  | A-T-055s   |
| Aro >C5-C7 <sub>A</sub> <sup>#</sup>           | <0.01      | <0.01      | <0.01      | <0.01      |  |  |  | mg/kg | 0.01               | A-T-022s   |
| Aro >C7-C8 <sub>A</sub> <sup>#</sup>           | <0.01      | <0.01      | <0.01      | <0.01      |  |  |  | mg/kg | 0.01               | A-T-022s   |
| Aro >C8-C10 <sub>A</sub>                       | <1         | 1          | 1          | 1          |  |  |  | mg/kg | 1                  | A-T-055s   |
| Aro >C10-C12 <sub>A</sub>                      | <1         | <1         | <1         | <1         |  |  |  | mg/kg | 1                  | A-T-055s   |
| Aro >C12-C16 <sub>A</sub>                      | 1          | 2          | 4          | 2          |  |  |  | mg/kg | 1                  | A-T-055s   |
| Aro >C16-C21 <sub>A</sub> <sup>M#</sup>        | 2          | 7          | 11         | 6          |  |  |  | mg/kg | 1                  | A-T-055s   |
| Aro >C21-C35 <sub>A</sub> <sup>M#</sup>        | 18         | 45         | 49         | 36         |  |  |  | mg/kg | 1                  | A-T-055s   |
| Total Aromatics <sub>A</sub>                   | 22         | 56         | 65         | 46         |  |  |  | mg/kg | 1                  | A-T-055s   |
| TPH (Ali & Aro >C5-C35) <sub>A</sub>           | 31         | 82         | 89         | 67         |  |  |  | mg/kg | 1                  | A-T-055s   |
| BTEX - Benzene <sub>A</sub> <sup>#</sup>       | <0.01      | <0.01      | <0.01      | <0.01      |  |  |  | mg/kg | 0.01               | A-T-022s   |
| BTEX - Toluene <sub>A</sub> <sup>#</sup>       | <0.01      | <0.01      | <0.01      | <0.01      |  |  |  | mg/kg | 0.01               | A-T-022s   |
| BTEX - Ethyl Benzene <sub>A</sub> <sup>#</sup> | <0.01      | <0.01      | <0.01      | <0.01      |  |  |  | mg/kg | 0.01               | A-T-022s   |
| BTEX - m & p Xylene <sub>A</sub> <sup>#</sup>  | <0.01      | <0.01      | <0.01      | <0.01      |  |  |  | mg/kg | 0.01               | A-T-022s   |
| BTEX - o Xylene <sub>A</sub> <sup>#</sup>      | <0.01      | <0.01      | <0.01      | <0.01      |  |  |  | mg/kg | 0.01               | A-T-022s   |
| MTBE <sub>A</sub> <sup>#</sup>                 | <0.01      | <0.01      | <0.01      | <0.01      |  |  |  | mg/kg | 0.01               | A-T-022s   |

## **REPORT NOTES**

### **General**

This report shall not be reproduced, except in full, without written approval from Envirolab.

The results reported herein relate only to the material supplied to the laboratory.

The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.

Analytical results reflect the quality of the sample at the time of analysis only.

Opinions and interpretations expressed are outside the scope of our accreditation.

If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.

A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

### **Soil chemical analysis:**

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.

For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any "A" subscripts

All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

### **TPH analysis of water by method A-T-007:**

Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

### **Electrical Conductivity of water by Method A-T-037:**

Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

### **Asbestos:**

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.

Stones etc. are not removed from the sample prior to analysis.

Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

### **Predominant Matrix Codes:**

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.

Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.

### **Secondary Matrix Codes:**

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,

E = contains roots/twigs.

### **Key:**

IS indicates Insufficient Sample for analysis.

US indicates Unsuitable Sample for analysis.

NDP indicates No Determination Possible.

NAD indicates No Asbestos Detected.

N/A indicates Not Applicable.

Superscript # indicates method accredited to ISO 17025.

Superscript "M" indicates method accredited to MCERTS.

Subscript "A" indicates analysis performed on the sample as received.

Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

## Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR  
Tel. 0161 368 4921 email. ask@envlab.co.uk

|                            |                                                                                                              |                                    |                 |
|----------------------------|--------------------------------------------------------------------------------------------------------------|------------------------------------|-----------------|
| <b>Client:</b>             | BEK Enviro Ltd, Suite One , No 3 Mitton Road Business Park , Mitton Road ,<br>Whalley , Lancashire , BB7 9YE | <b>Project No:</b>                 | 21/09692        |
| <b>Project:</b>            | Ilk Street, Clayton                                                                                          | <b>Date Received:</b>              | 07/09/2021 (am) |
| <b>Clients Project No:</b> |                                                                                                              | <b>Cool Box Temperatures (°C):</b> | 20.6            |

NO DEVIATIONS IDENTIFIED with respect to sampling dates or containers received.

Note: If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3 (for water samples  $5 \pm 3^{\circ}\text{C}$ ), ISO 18400-105:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

## Envirolab Analysis Dates

| Lab Sample ID          | 21/09692/1 | 21/09692/2 | 21/09692/3 | 21/09692/4 |
|------------------------|------------|------------|------------|------------|
| Client Sample No       |            |            |            |            |
| Client Sample ID/Depth | VS-TS-4    | VS-TS-5    | VS-TS-6    | VS-TS-7    |
| Date Sampled           | 06/09/21   | 06/09/21   | 06/09/21   | 06/09/21   |
| A-T-019s               | 09/09/2021 | 09/09/2021 | 09/09/2021 | 09/09/2021 |
| A-T-022s               | 15/09/2021 | 15/09/2021 | 15/09/2021 | 15/09/2021 |
| A-T-024s               | 17/09/2021 | 17/09/2021 | 17/09/2021 | 17/09/2021 |
| A-T-026s               | 16/09/2021 | 16/09/2021 | 16/09/2021 | 16/09/2021 |
| A-T-027s               | 16/09/2021 | 16/09/2021 | 16/09/2021 | 16/09/2021 |
| A-T-028s               | 17/09/2021 | 17/09/2021 | 17/09/2021 | 17/09/2021 |
| A-T-031s               | 16/09/2021 | 16/09/2021 | 16/09/2021 | 16/09/2021 |
| A-T-032 OM             | 16/09/2021 | 16/09/2021 | 16/09/2021 | 16/09/2021 |
| A-T-040s               | 16/09/2021 | 16/09/2021 | 16/09/2021 | 16/09/2021 |
| A-T-042sTCN            | 10/09/2021 | 10/09/2021 | 10/09/2021 | 14/09/2021 |
| A-T-044                | 14/09/2021 | 14/09/2021 | 14/09/2021 | 14/09/2021 |
| A-T-045                | 09/09/2021 | 09/09/2021 | 09/09/2021 | 09/09/2021 |
| A-T-050s               | 11/09/2021 | 11/09/2021 | 11/09/2021 | 11/09/2021 |
| A-T-055s               | 15/09/2021 | 15/09/2021 | 15/09/2021 | 15/09/2021 |

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

**End of Report**

## ANNEX C

### Gas Membrane Data Sheet

# Protech GM Super

## GAS PROTECTION

### • HIGH RISK CHARACTERISTIC SITES •

#### REGULATIONS COMPATIBILITY TABLE

|                   | CIRIA 665<br>CHARACTERISTIC<br>SITUATION 2 | CIRIA 665<br>CHARACTERISTIC<br>SITUATION 3-6 | BS8485<br>CHARACTERISTIC<br>SITUATION 2 | BS8485<br>CHARACTERISTIC<br>SITUATION 3-6 | BRE 211<br>RADON | NHBC<br>AMBER 1 | NHBC AMBER 2<br>& RED |
|-------------------|--------------------------------------------|----------------------------------------------|-----------------------------------------|-------------------------------------------|------------------|-----------------|-----------------------|
| METHANE           | ✓                                          | ✓                                            | ✓                                       | ✓                                         | N/A              | ✓               | ✓                     |
| CARBON<br>DIOXIDE | ✓                                          | ✓                                            | ✓                                       | ✓                                         | N/A              | ✓               | ✓                     |
| RADON             | N/A                                        | N/A                                          | N/A                                     | N/A                                       | ✓                | N/A             | N/A                   |

#### DESCRIPTION

Protech GM Super is a high performance proprietary reinforced gas barrier; that incorporates a 12 micron aluminium foil layer, for maximum protection against ground-borne gases. This has been specifically designed to conform with the latest guidance documents. Due to its unique composition, the membrane is extremely robust and flexible and, therefore, easy to install on site. The membrane also provides protection from damp when placed below the slab and, therefore, there is no need to install a separate DPM.

#### SPECIFICATION

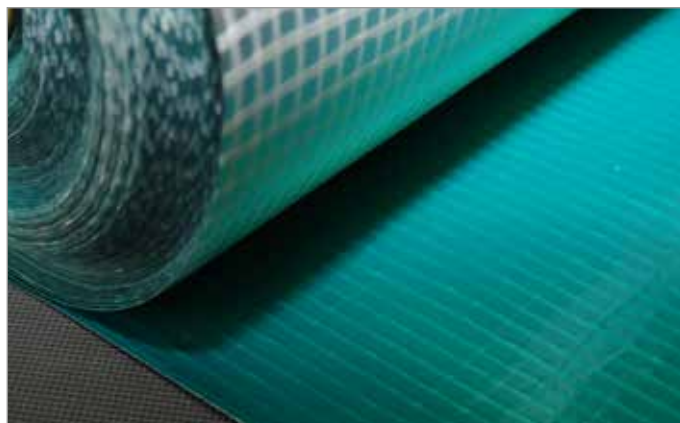
CIRIA C665, BS8485:2015 & Local Authority Ground Gas Handbook recommended that gas membranes are specified on the basis of the 'need to survive' construction, i.e. use one that is puncture and tear resistant.

Thickness should not be the main determinant of the suitability of a membrane for a particular site, although it can indirectly influence some key performance parameters.

In practise, because of the nature of construction sites, the durability, survivability and robustness of membranes are equally important than purely permeability to gas.

Protech GM Super incorporates a reinforced grid to ensure that maximum protection is achieved when installed to manufacturers' instructions.

The need for high quality workmanship during installation should not be under-estimated. The health and safety of the occupants of the building is dependent on its satisfactory performance. If installed incorrectly or damaged during the construction process, the membrane is rendered ineffective and will fail to provide adequate protection against the ingress of ground gas or vapours.



| TYPICAL PROPERTIES                 |                             |
|------------------------------------|-----------------------------|
| Roll Length                        | 50m                         |
| Width                              | 2m                          |
| Weight                             | 370g/m <sup>2</sup>         |
| Thickness                          | 0.4mm                       |
| Colour                             | Green / Silver              |
| Methane Permeability (ISO 15105-1) | ≤ 0.1 ml/day/m <sup>2</sup> |

#### REQUIRED ACCESSORIES

- Protech GM Super Starter Band (1m x 50m)
- Protech GM Tape
- Protech GM Tophats
- Protech SAGM (Self Adhesive Gas Membrane)
- Protech GM Flashing Strip
- Protech GM Super Corner Units
- Protech GM Primer
- Protech GM 3mm Protection Board
- Protech GM Protection Fleece
- Protech I25

#### VENTING

On sites where venting is required, our Provoid Venting System should be used. We can provide design advice for both passive and active venting systems to suit individual site requirements.

# Protech GM Super Starter Band

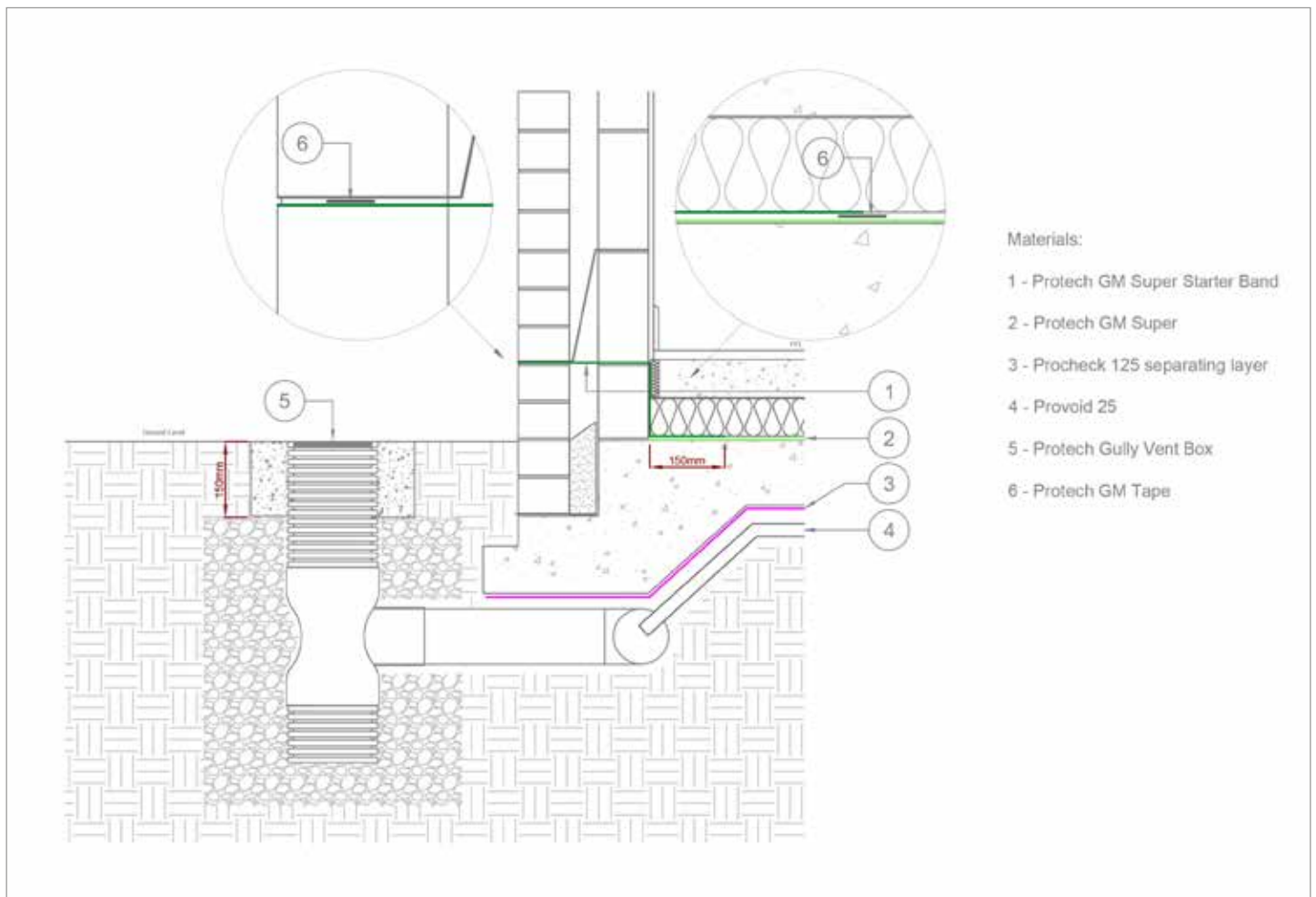
## GAS PROTECTION

### DESCRIPTION

The Protech GM Super Starter Band has a dual function, to provide a continuous barrier to gas which is then linked in with the horizontal gas membrane and it will also function as a DPC within the wall.

The Starter Band goes through the cavity with an architectural DPC or cavity tray which should be fixed with Protech GMTape in order to stop a creation of a slip plane.

On a solid wall internal wall construction there is no requirement for any additional DPC or protection to the Starter Band. When used in a cavity wall a separate cavity tray or architectural DPC is recommended to protection the spanning section of the Starter Band from damage from mortar spots and other debris created during construction. This cavity tray would be installed in the same course and fixed to Protech GMTape again to prevent a creation of a slip plane.



Download a full Gas Protection brochure from our website...

[www.proctorgroup.com](http://www.proctorgroup.com)



contact@proctorgroup.com | +44 (0) 1250 872261

Revised June 2019



## ANNEX D

### Gas Proforma

# GAS PROTECTION VALIDATION RECORD:

*Ilk Street and Alpine Street, Clayton Residential Development*

## PLOT 58



**One record sheet to be completed for each plot inspected by a suitably qualified independent consultant/engineer**

|           |                              |                          |                                                     |                 |                                        |
|-----------|------------------------------|--------------------------|-----------------------------------------------------|-----------------|----------------------------------------|
| Job No    | 19658                        | Design/specification ref | BEK RMS dated December 2019 (BEK-19661-1 (Rev D))   |                 |                                        |
| Site Name | Ilk Street and Alpine Street | Building use             | Residential/ <del>commercial/other</del>            |                 |                                        |
| Plot No   | 58                           | Building description     | <del>Detached/semi-detached/terrace/apartment</del> |                 |                                        |
| Compiled  | D Emmott                     | Gas protection type      | Active/passive                                      | Foundation type | Suspended floor/ <del>raft/other</del> |

|                                   |                       |              |              |     |              |                 |
|-----------------------------------|-----------------------|--------------|--------------|-----|--------------|-----------------|
| Ventilated sub floor (if present) | Inspection date/type: | October 2020 | Inspected by | BEK | Photographed | Y/ <del>N</del> |
|-----------------------------------|-----------------------|--------------|--------------|-----|--------------|-----------------|

|                              |                             | notes/comments (see guide below)            |
|------------------------------|-----------------------------|---------------------------------------------|
| Void former type             | <del>Y</del> / <del>N</del> | 1. Not required - open void space           |
| Height of void space         | Y/ <del>N</del>             | 2. Minimum 150 mm                           |
| Gravel type                  | <del>Y</del> / <del>N</del> | 3. Not required - open space                |
| Pipe size and spacing        | Y/ <del>N</del>             | 4. Minimum 2 m spacing where required       |
| External wall air bricks     | Y/ <del>N</del>             | 5. 2 m centres - all clear and unobstructed |
| Internal sleeper walls       | Y/ <del>N</del>             | 6. Joints in masonry allow free venting     |
| External vent trenches/ducts | <del>Y</del> / <del>N</del> | 7. Not required                             |

|             |                       |              |              |     |              |                 |
|-------------|-----------------------|--------------|--------------|-----|--------------|-----------------|
| Gas barrier | Inspection date/type: | October 2020 | Inspected by | BEK | Photographed | Y/ <del>N</del> |
|-------------|-----------------------|--------------|--------------|-----|--------------|-----------------|

|                           |                 | notes/comments (see guide below)                           |
|---------------------------|-----------------|------------------------------------------------------------|
| Membrane type             | Y/ <del>N</del> | 8. Sigma GPS 2000                                          |
| Extent of coverage        | Y/ <del>N</del> | 9. Full ground floor                                       |
| Underside of membrane     | Y/ <del>N</del> | 10. Good conditions - All rips/tears sealed using tape     |
| Slab/membrane condition   | Y/ <del>N</del> | 11. Free from debris - good condition                      |
| Laps and joints           | Y/ <del>N</del> | 12. All laps and joined sealed correctly using tape        |
| Damp-proof membrane       | Y/ <del>N</del> | 13. OK                                                     |
| Service entries and seals | Y/ <del>N</del> | 14. All sealed appropriately using tape                    |
| Cavity inspection         | Y/ <del>N</del> | 15. Membrane crosses cavity - cavity clear of obstructions |

# GAS PROTECTION VALIDATION RECORD:

*Ilk Street and Alpine Street, Clayton Residential Development*

**PLOT 58**



## Guide Notes

|     |                              |                                                                                                                                                                                                                                                                                                                                                                            |
|-----|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.  | Void former height           | Proprietary type – manufacturer and specification, in accordance with design? Installed property without damage                                                                                                                                                                                                                                                            |
| 2.  | Height of void space         | Height of proprietary former of constructed ventilated space below suspended floor – note any debris on void/obstructions to air flow, note formation surface soil type (eg crushed concrete/brick), evidence of flooding                                                                                                                                                  |
| 3.  | Gravel type                  | Gravel type if used (limestone/granite etc) and any specification (eg 6F2), typical particle dimensions (mm), apparent fines content (low/high), compaction (loose/dense), waterlogging/contamination by clay, organic matter, other debris. Take photographs of stockpile or check details on delivery notes. Check depth of stone conforms to at least 300 mm if visible |
| 4.  | Pipe size and spacing        | Diameter in mm; material type (eg PVC); slotted or perforated; positioning and spacing/separation and jointing as on design drawing – if not sketch arrangement – do pipes connect with external (telescopic/swan neck) vents? Take photographs of vents on external walls for each plot.                                                                                  |
| 5.  | External wall airbricks      | Check numbers, size and positions as design drawing – check for blockage eg mortar, soil, pavings etc                                                                                                                                                                                                                                                                      |
| 6.  | Internal wall airbricks      | Check ventilation holes eg honeycomb brickwork or pipe crossings – note size, spacing and location                                                                                                                                                                                                                                                                         |
| 7.  | External vent trenches/ducts | Check whether located and constructed in accordance with design drawings; if open-topped gravel, note gravel type and presence of fines/contamination; if pipe or other vents – check positions and construction for functionality and absence of blockages – vents may be built over                                                                                      |
| 8.  | Membrane type                | Note manufacturer and product specification, including batch/roll numbers if present – in accordance with specification? Check stock storage arrangements – protected from dirt and damage                                                                                                                                                                                 |
| 9.  | Extent of coverage           | If membrane cover is incomplete then further inspection will be required – note areas completed/incomplete – is membrane fully visible or have internal walls been constructed over membrane/screed placed?                                                                                                                                                                |
| 10. | Underside of membrane        | Where necessary, for example, when using a granular blanket as a ventilation layer, check the underside of the membrane has adequate protection eg minimum 50 mm no fines concrete blinding layer or appropriate geo-textile                                                                                                                                               |
| 11. | Slab/membrane condition      | Record presence of ducts/rough surfaces, in particular sharp projections, below or above membrane; record locations of all punctures or repairs, note arrangements to protect membrane surface from traffic/tools and equipment/materials and temporary weighting down of membrane eg use of boards. Take photographs of each plot inspected.                              |



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|     |                           |                                                                                                                                                                                                                                                                                                                                                            |
|-----|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12. | Laps and joints           | Check that all joints are lapped and sealed in accordance with manufacturer's requirements/specification, particular where creases/folds are present (usually minimum 150 mm laps with double-sided tape between sheets and single sided tape on top surface; note size of sheets and frequency of edge seals). Take photographs of jointing for each plot |
| 13. | Damp-proof course         | Record DPC manufacturer and product code - usually integrated with the membrane; measure the DPC projection from external wall in mm; check laps and seals between membrane and DPC - note any potential stress points and tension between the two; check for damage to DPC                                                                                |
| 14. | Service entries and seals | Check top hat seal arrangement in accordance with design/specification (laps and seals between top hat and floor membrane, pipe upstand is usually a minimum 150 mm) check. Take photographs for all plots inspected                                                                                                                                       |
| 15. | Cavity inspection         | Check gas membrane or gas resistant DPC is taken across cavity. Check for rips across cavity. Check for jointing detail of gas resistant DPC or membrane across cavity to main membrane. Take photographs for all plots inspected                                                                                                                          |

This confirms that PLOT 58 at Ilk Street and Alpine Street, Clayton has PASSED / ~~FAILED~~ inspection

(any proposed remedial works should be noted in the 'notes/recommendations' column of this form)

An additional inspection ~~IS~~/ IS NOT required for this plot

Qualified Engineer: .....DAVID EMMOTT..... Signed:.....  
(print name)



GEO-ENVIRONMENTAL CONSULTING ENGINEERS

## ANNEX E

### Validation Photographs



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**bEk Enviro Ltd**

Suite One | No 3 Mitton Road Business Park  
Mitton Road | Whalley | Lancashire | BB7 9YE

**01254 377622**

[mbuckley@bekenviron.co.uk](mailto:mbuckley@bekenviron.co.uk) | [bekenviron.co.uk](http://bekenviron.co.uk)



Photograph 1: Validation of Garden Capping Thickness (Plot 58, not 57)



Photograph 2: Validation of Garden Capping Thickness (Plot 58, not 57)



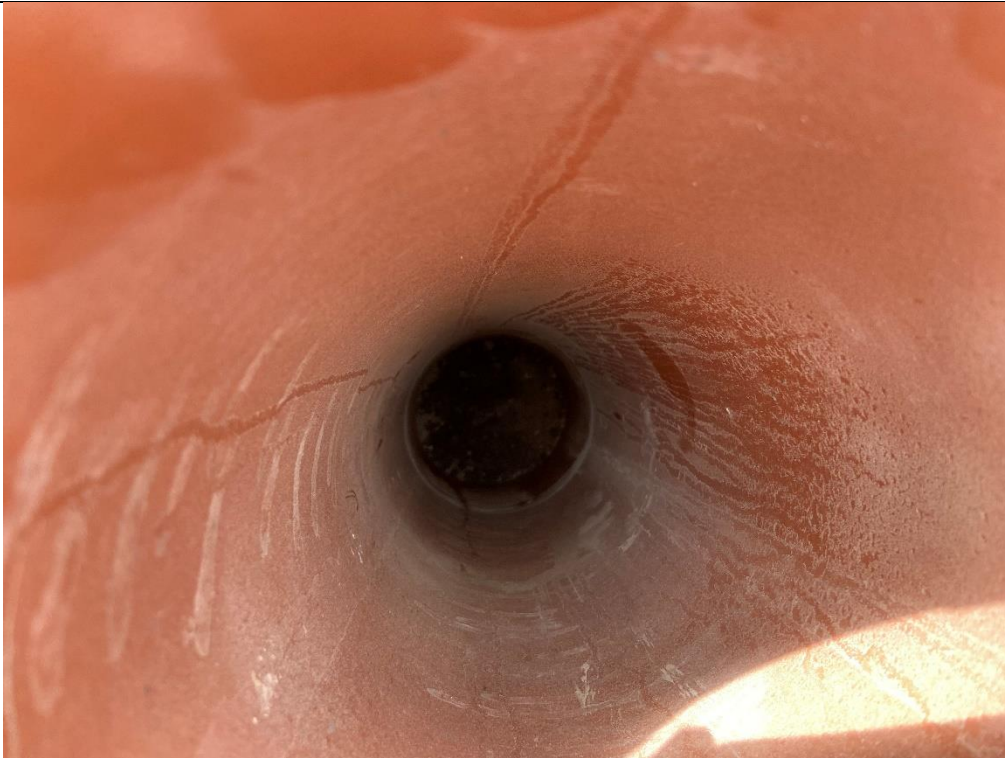
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Photograph 3: Validation of Geotextile Membrane



Photograph 4: Validation of Sub-Floor Void Space (min 150 mm)



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Photograph 5: Validation of Gas Membrane Installation



Photograph 6: Validation of Gas Membrane Installation



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**01254 377622**

[mbuckley@bekenviron.co.uk](mailto:mbuckley@bekenviron.co.uk) | [bekenviron.co.uk](http://bekenviron.co.uk)



Photograph 7: Validation of Gas Membrane Installation



Photograph 8: Validation of Gas Membrane Installation