



18 Frogmore Road  
Hemel Hempstead  
Hertfordshire  
HP3 9RT  
UK

Our Ref: 27621 L14 (01) / JL

17<sup>th</sup> August 2017

CALA Homes (South Home Counties) Limited  
Tilford House,  
Farnham Business Park,  
Weydon Lane,  
Farnham,  
Surrey, GU9 8QT

**FAO: Mr James Rwodzi**

Dear James Rwodzi,

**RE: Former West End Nursery, Angmering - Validation Plots 1 – 4.**

## 1. BACKGROUND

RSK Environment Limited (RSK) was commissioned by CALA Homes (South Home Counties) Limited (CALA) to carry out garden validation testing of Plots 1 - 4 of the former West End Nursery site off Roundstone Lane, Angmering, BN16 4AX. The site was previously occupied by a commercial nursery.

Several phases of site investigation, risk assessments, a remedial strategy and post remediation verification report (Phase 1A) have been completed for the former West End Nursery site by RSK. These are outlined in the following reports:

- RSK, 2015a. Geo-environmental Site Investigation, report ref: 27621 R01 (02), dated May 2016;
- RSK, 2015b. Additional Geo-environmental Site Investigation and Remediation, report ref: 27621 R02 (00), dated June 2015;
- RSK, 2016a. Remedial Strategy, report ref: 27621 R03 (02), dated August 2017;
- RSK, 2016b. Supplementary Geo-environmental Site Assessment, report ref: 27621 R04 (01), dated June 2016;
- RSK 2016c. Tank Validation, report ref: 27621 L01/ad, dated August 2016;
- RSK 2016d. Bund Validation Works, report ref: 27621 L02, dated October 2016;
- RSK 2016e. Asbestos Delineation Works Phase 1A – Plots 1 to 19, report ref: 27621 L04, dated October 2016;
- RSK, 2017. Asbestos Delineation Works Phase 1A – Plots 18 and 20 to 64, report ref: 27621 L05, dated February 2017; and
- RSK, 2017. Post-remediation validation report – Phase 1A, report ref: 27621 R06 (00), dated May 2017.

A number of impacted areas were found previously across the site including elevated concentrations of pesticides (one location), hydrocarbons, asbestos and metals.



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A first phase of remediation was undertaken at the site by Keltbray in accordance with recommendations contained within the approved remedial strategy for the site (RSK report ref: 27621 R03 (01), January 2016). The remedial works undertaken by Keltbray were documented in Completion Report, 6033.CR.LH.08072016V3, dated August 2016.

Throughout the Keltbray remedial works RSK attended site on an ad hoc basis to verify the works carried out. Validation works completed by RSK are detailed within the post remediation verification report produced for Phase 1A.

Based upon the remedial works carried out to date within the Phase 1A, it is considered that the area is suitable for the proposed residential end use, subject to the results of additional validation gas assessment across Phase 1A and garden/soft landscaping validation works.

Since the development works commenced RSK have collected a significant amount of additional data within Phase 1A (plots 1-64). Having reviewed the ground conditions and gas monitoring data from the nearby historic monitoring wells RSK anticipate that additional validation monitoring will demonstrate a sufficiently low risk from ground gases on site. All of the plots in Phase 1A will still have a minimum of a 1200 gauge membrane installed to provide a belt and braces approach. All future plots on the development from CALA Homes will have an Amber 1/CS2 compliant membrane installed. RSK will not inspect every one of the future installed membranes, but will visit to witness approximately 10% of the remaining properties to maintain the confidence in the membranes being installed on site are suitably installed correctly.

Validation of the topsoil and subsoil is ongoing, with RSK inspecting the completed gardens for presence of geo-membrane where applicable and cover layer thickness of subsoil and topsoil.

## **2. CAPPING LAYER REMEDIAL REQUIREMENTS**

On the basis of the impacts previously identified at the site, it was recommended that a capping layer be incorporated into private garden areas to ensure that no residual risk exists to human health from any impacted soils. The specification for the capping layer as agreed with Arun District Council is as follows:

The capping layer in areas of identified impact (remaining bund materials, pesticide hotspot and made ground containing asbestos) and in the central landscaped area should be 600 mm thick to include a minimum of 150 mm clean imported topsoil and 450 mm clean imported/site won subsoil with a geo-marker membrane at the base. In lower risk areas (i.e. no impacts identified during the previous phases of works) the capping layer should be 450 mm to include a minimum of 150 mm clean imported topsoil and 300 mm clean imported/site won subsoil.

Validation of the capping layer should consist of the following:

- In private gardens, testing should be carried out on the basis of one sample for every 50 m<sup>3</sup> area of garden; and
- In communal soft landscaping areas, testing should be carried out on the basis of one sample for every 250 m<sup>3</sup> of soft landscaping.

Based upon the recommendations above, this letter report represents a verification of the appropriate implementation of capping layer construction at relevant plots within the completed development.

The comments given in this report and the opinions expressed are based on the ground conditions encountered during the site work, on the results of laboratory analysis on soil samples and on available information. All works undertaken at the site are in accordance with the RSK Service Constraints presented in **Appendix A**.

### 3. SITE INSPECTION

RSK attended site on 28<sup>th</sup> March 2017, 25<sup>th</sup> May 2017 and 7<sup>th</sup> June 2017 to inspect and validate the capping layer (topsoil/subsoil) within the rear and front garden areas of Plots 1 - 4. Photographs from the site inspection are presented in **Appendix B**.

At least one hand-excavated trial pit was completed in each of the garden areas (front and rear gardens) of the Plots (1 - 4) to a depth of at least 450 mm below the existing ground level to allow for inspection and sampling of soils. The trial pit logs are presented in **Appendix C**.

The topsoil was of a uniform composition, generally comprising loose black/ brown gravelly silty clayey fine to medium SAND or mid to dark brown, silty gravelly sandy CLAY. Gravel is subrounded to angular fine to medium flint. The topsoil was followed by the subsoil strata which generally comprised stiff orangey brown/ light brown slightly sandy CLAY or light brown slightly clayey gravelly SAND.

The depth of the capping layer within the gardens was at least 450 mm across plots 1 - 4. It is considered that this demonstrates compliance of the specified capping layer remedial measures.

A site layout plan for Phase 1A is presented as **Figure 1**. The validation certificates for the imported topsoil are presented in **Appendix D**.

### 4. VERIFICATION TESTING

Soil samples were submitted for chemical laboratory testing comprising a standard suite of potential contaminants. Soil samples were submitted for the following suite of analysis:

- Selected heavy/semi/non-metals (including chromium VI);
- pH and sulphate;
- Speciated Total Petroleum Hydrocarbons (TPH)-CWG banding with BTEX (Benzene, Toluene, Ethyl Benzene and Xylene) and MTBE (Methyl Tert Butyl Ether) determination; and
- Speciated Polycyclic Aromatic Hydrocarbons (PAH),
- Asbestos screen.

A summary of the capping layer volumes is presented in **Table 1**.

**Table 1: Summary of capping layer volumes**

| Plot Number       | Combined topsoil/subsoil volume - front and rear (m <sup>2</sup> ) | Samples Tested |
|-------------------|--------------------------------------------------------------------|----------------|
| 1                 | 50.75                                                              | 1              |
| 2                 | 65.44                                                              | 2              |
| 3                 | 42.39                                                              | 1              |
| 4                 | 48.51                                                              | 1              |
| Total plots 1 - 4 | 207.09                                                             | 5              |

A total of 5 validation samples were collected from plots 1 - 4 (one per rear garden), with the exception of Plot 2 from which two samples were collected (one from the front garden and one from the rear garden) in accordance with the remedial requirements. Based upon the testing strategy of 1 sample per 50 m<sup>3</sup> it is considered that an appropriate number of samples have been obtained.

The chemical results are presented in **Appendix E** and indicate that concentrations of analytes are below the RSK GAC presented in **Appendix F**.

## 5. CONCLUSIONS

The results of the site inspection and laboratory testing for plots 1 - 4 have demonstrated that the topsoil and subsoil are chemically suitable for the proposed residential end-use and the capping layer has been completed to the required specification, comprising at least 450 mm across plots 1 - 4. It is therefore considered that no further verification of the private garden areas of 1 - 4 is deemed necessary.

It is considered that the inspection data for the garden areas are sufficient and that this letter report may be submitted to the NHBC, so that the appropriate land quality condition can be discharged based on the information provided.



We trust that the information discussed above is acceptable and recommend this report be submitted to the NHBC and Local Authority accordingly. Should you require RSK to submit this information on your behalf, please do not hesitate to contact us.

Yours sincerely

For RSK Environment Limited



**Josh Laite**

**Cathy Latimer**

Geo-Environmental Consultant

Principal Geo-Environmental Consultant

Enc.

Figures 1      Phase 1A - Site Location Plan

Appendix A      Service Constraints

Appendix B      Photographic Log

Appendix C      Trial Pit Logs

Appendix D      Topsoil Validation Certificates

Appendix E      Laboratory Certificates

Appendix F      RSK Generic Assessment Criteria

## FIGURES



- LEGEND
- Site Boundary (Phase 1A)
  - 600mm Capping Layer Required (total 1749.452m<sup>2</sup>)
  - 450mm Capping Layer Required (total 3563.123m<sup>2</sup>)

| Rev. | Date | Amendment | Drawn | Chkd. | Appd. |
|------|------|-----------|-------|-------|-------|
|      |      |           |       |       |       |



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Client  
**CALA HOMES (SOUTH HOME COUNTIES) LTD**

Project Title  
**LAND AT WEST END NURSERY, ANGMERING**

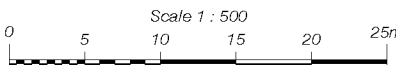
Drawing Title  
**PHASE 1A - SITE LOCATION PLAN**

| Drawn | Date     | Checked | Date     | Approved | Date     |
|-------|----------|---------|----------|----------|----------|
| AP    | 10.05.17 | CL      | 10.05.17 | CL       | 10.05.17 |

| Scale | Orig Size | Dimensions |
|-------|-----------|------------|
| 1:500 | A2        | M          |

| Project No. | Drawing File    |
|-------------|-----------------|
| 27621       | 27621 Fig 1.dwg |

| Drawing No. | Rev. |
|-------------|------|
| FIGURE 1    | P1   |





## **APPENDIX A**

### **SERVICE CONSTRAINTS**

1. This report and the site investigation carried out in connection with the report (together the "Services") were compiled and carried out by RSK Environment Limited (RSK) for CALA Homes (South Home Counties) Limited (the "client") in accordance with the terms of a contract between RSK and the "client". The Services were performed by RSK with the skill and care ordinarily exercised by a reasonable environmental consultant at the time the Services were performed. Further, and in particular, the Services were performed by RSK taking into account the limits of the scope of works required by the client, the time scale involved and the resources, including financial and manpower resources, agreed between RSK and the client.
2. Other than that expressly contained in paragraph 1 above, RSK provides no other representation or warranty whether express or implied, in relation to the Services.
3. Unless otherwise agreed the Services were performed by RSK exclusively for the purposes of the client. RSK is not aware of any interest of or reliance by any party other than the client in or on the Services. Unless expressly provided in writing, RSK does not authorise, consent or condone any party other than the client relying upon the Services. Should this report or any part of this report, or otherwise details of the Services or any part of the Services be made known to any such party, and such party relies thereon that party does so wholly at its own and sole risk and RSK disclaims any liability to such parties. Any such party would be well advised to seek independent advice from a competent environmental consultant and/or lawyer.
4. It is RSK's understanding that this report is to be used for the purpose described in the introduction to the report. That purpose was a significant factor in determining the scope and level of the Services. Should the purpose for which the report is used, or the proposed use of the site change, this report may no longer be valid and any further use of or reliance upon the report in those circumstances by the client without RSK's review and advice shall be at the client's sole and own risk. Should RSK be requested to review the report after the date hereof, RSK shall be entitled to additional payment at the then existing rates or such other terms as agreed between RSK and the client.
5. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should not be relied upon in the future without the written advice of RSK. In the absence of such written advice of RSK, reliance on the report in the future shall be at the client's own and sole risk. Should RSK be requested to review the report in the future, RSK shall be entitled to additional payment at the then existing rate or such other terms as may be agreed between RSK and the client.
6. The observations and conclusions described in this report are based solely upon the Services that were provided pursuant to the agreement between the client and RSK. RSK has not performed any observations, investigations, studies or testing not specifically set out or required by the contract between the client and RSK. RSK is not liable for the existence of any condition, the discovery of which would require performance of services not otherwise contained in the Services. For the avoidance of doubt, unless otherwise expressly referred to in the introduction to this report, RSK did not seek to evaluate the presence on or off the site of asbestos, electromagnetic fields, lead paint, heavy metals, radon gas or other radioactive or hazardous materials.
7. The Services are based upon RSK's observations of existing physical conditions at the Site gained from a walk-over survey of the site together with RSK's interpretation of information including documentation, obtained from third parties and from the client on the history and usage of the site. The Services are also based on information and/or analysis provided by independent testing and information services or laboratories upon which RSK was reasonably entitled to rely. The Services clearly are limited by the accuracy of the information, including documentation, reviewed by RSK and the observations possible at the time of the walkover survey. Further RSK was not authorised and did not attempt to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties, including laboratories and information services, during the performance of the Services. RSK is not liable for any inaccurate information or conclusions, the discovery of which inaccuracies required the doing of any act including the gathering of any information which was not reasonably available to RSK and including the doing of any independent investigation of the information provided to RSK save as otherwise provided in the terms of the contract between the client and RSK.
8. The phase II or intrusive environmental site investigation aspects of the Services is a limited sampling of the site at pre-determined borehole and soil vapour locations based on the operational configuration of the site. The conclusions given in this report are based on information gathered at the specific test locations and can only be extrapolated to an undefined limited area around those locations. The extent of the limited area depends on the soil and groundwater conditions, together with the position of any current structures and underground facilities and natural and other activities on site. In addition chemical analysis was carried out for a limited number of parameters [as stipulated in the contract between the client and RSK] [based on an understanding of the available operational and historical information,] and it should not be inferred that other chemical species are not present.
9. Any site drawing(s) provided in this report is (are) not meant to be an accurate base plan, but is (are) used to present the general relative locations of features on, and surrounding, the site.



## **APPENDIX B PHOTOGRAPHIC LOG**

## PHOTOGRAPHIC LOG

Site Location: Former West End Nursery, Angmering

**Photo No.**  
1

**Date:**  
28/03/2017

General view across plot 1 (foreground) and plot 32, looking northwest



**Photo No.**  
2

**Date:**  
28/03/2017

Capping layer depth of >600mm observed within plot 1 back garden



## PHOTOGRAPHIC LOG

Site Location: Former West End Nursery, Angmering

**Photo No.**  
3

**Date:**  
28/03/2017

View of  
hand pit  
within plot 1  
back garden



**Photo No.**  
4

**Date:**  
06/06/2017

Capping  
layer depth  
of >450mm  
observed  
within plot 1  
front garden



## PHOTOGRAPHIC LOG

Site Location: Former West End Nursery, Angmering

Photo No.  
5

Date:  
06/06/2017

View of  
hand pit  
within Plot 1  
front garden



Photo No.  
6

Date:  
24/05/2017

Capping  
layer depth  
of >450mm  
observed  
within Plot 2  
back garden



## PHOTOGRAPHIC LOG

Site Location: Former West End Nursery, Angmering

Photo No.  
7

Date:  
24/05/2017

View of hand pit within Plot 2 rear garden, fragments of geo-marker membrane observed in capping layer



Photo No.  
8

Date:  
06/06/2017

Capping layer depth of >450mm observed within plot 2 front garden



## PHOTOGRAPHIC LOG

Site Location: Former West End Nursery, Angmering

Photo No.  
9

Date:  
06/06/2017

View of  
hand pit  
within Plot 2  
front garden



Photo No.  
10

Date:  
06/06/2017

Capping  
layer depth  
of >450mm  
observed  
within Plot 3  
back garden



## PHOTOGRAPHIC LOG

Site Location: Former West End Nursery, Angmering

Photo No.  
11

Date:  
24/05/2017

View of hand pit within Plot 3 rear garden, fragments of geo-marker membrane observed in capping layer



Photo No.  
12

Date:  
06/06/2017

Capping layer depth of >450mm observed within Plot 3 front garden



| PHOTOGRAPHIC LOG                                                 |                                                                                      |
|------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Site Location: Former West End Nursery, Angmering                |                                                                                      |
| <b>Photo No.</b><br>13                                           |   |
| <b>Date:</b><br>06/06/2017                                       |                                                                                      |
| View of hand pit within Plot 3 front garden                      |                                                                                      |
| <b>Photo No.</b><br>14                                           |  |
| <b>Date:</b><br>24/05/2017                                       |                                                                                      |
| Capping layer depth of >450mm observed within Plot 4 back garden |                                                                                      |

## PHOTOGRAPHIC LOG

Site Location: Former West End Nursery, Angmering

Photo No.  
15

Date:  
06/06/2017

View of hand pit within Plot 4 rear garden, fragments of geo-marker membrane observed in capping layer

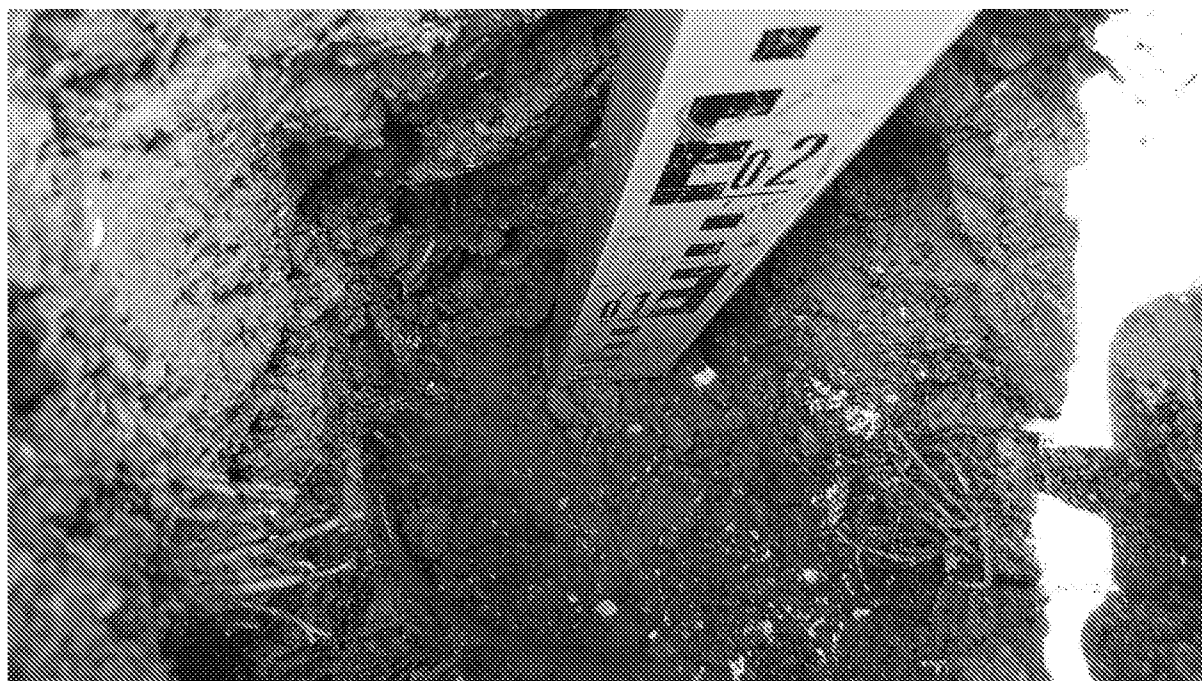


Photo No.  
16

Date:  
06/06/2017

Capping layer depth of >450mm observed within Plot 4 front garden



## PHOTOGRAPHIC LOG

Site Location: Former West End Nursery, Angmering

Photo No.  
17

Date:  
06/06/2017

View of Trial  
Pit within  
plot 4 front  
garden





## **APPENDIX C TRIAL PIT LOGS**



## TRIAL PIT LOG

|                                                         |                                                |                             |                                                        |                         |                           |
|---------------------------------------------------------|------------------------------------------------|-----------------------------|--------------------------------------------------------|-------------------------|---------------------------|
| Contract:<br><b>Land at West End Nursery, Angmering</b> |                                                |                             | Client:<br><b>Cala Homes (South Home Counties) Ltd</b> |                         | Trial Pit:<br><b>HDP1</b> |
| Contract Ref:<br><b>27621</b>                           | Start: <b>28.03.17</b><br>End: <b>28.03.17</b> | Ground Level:<br><b>---</b> | Co-ordinates:<br><b>---</b>                            | Sheet:<br><b>1 of 1</b> |                           |

| Samples and In-situ Tests |    |      |              | Water | Backfill | Description of Strata                                                                                                                                                                                                   | Depth<br>(Thickness) | Material<br>Graphic<br>Legend |
|---------------------------|----|------|--------------|-------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-------------------------------|
| Depth                     | No | Type | Results      |       |          |                                                                                                                                                                                                                         |                      |                               |
| 0.60                      | 1  | ES   | Tub+Jar+Vial |       |          | TOPSOIL: Loose black and dark brown slightly clayey gravelly SAND. Sand is fine to medium. Gravel is angular to rounded fine to medium flint.                                                                           | (0.40)               |                               |
|                           |    |      |              |       |          | Stiff orangish brown slightly sandy gravelly CLAY with a low cobble content. Gravel is subangular to well rounded fine to coarse flint. Cobbles are subangular to well rounded flint. (REWORKED RIVER TERRACE DEPOSITS) | 0.40                 |                               |
|                           |    |      |              |       |          | Hand pit terminated at 0.70 m depth.                                                                                                                                                                                    | (0.30)               |                               |
|                           |    |      |              |       |          |                                                                                                                                                                                                                         | 0.70                 |                               |

## General Remarks

1. Hand pit remained dry and stable during excavation.
2. Backfilled with arisings.

All dimensions in metres

Scale:

1:25

Method

Plant

Logged

Checked

Used: V155/21/DOC

Hand dug

Used:

Hand tools

By:

CLewis

By:



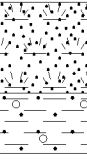


| Samples and In-situ Tests |    |      |         | Water | Backfill | Description of Strata                                                                                                                                  | Depth<br>(Thick<br>ness) | Material<br>Graphic<br>Legend                                                       |
|---------------------------|----|------|---------|-------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-------------------------------------------------------------------------------------|
| Depth                     | No | Type | Results |       |          |                                                                                                                                                        |                          |                                                                                     |
| 0.30                      | 1  | ES   |         |       |          | TOPSOIL: Dark brown mottled black clayey gravelly SAND. Sand is fine to coarse. Gravel is angular to rounded fine to coarse flint.                     | 0.25                     |  |
|                           |    |      |         |       |          | Orangish brown sandy gravelly CLAY. Sand is fine to medium. Gravel is angular to subrounded fine to coarse flint.<br>(REWORKED RIVER TERRACE DEPOSITS) | (0.35)                   |  |
|                           |    |      |         |       |          | Hand pit terminated at 0.60m bgl.                                                                                                                      | 0.60                     |  |

1. Hand Pit remained dry and stable during excavation
2. Backfilled with arisings
3. Geomembrane observed at 0.25 m. Reworked River terrace deposits, consistent with previous plots, identified below marker membrane.

ARUN DISTRICT COURT used



| Samples and In-situ Tests |    |      |         | Water | Backfill | Description of Strata                                                                                                                                  | Depth<br>(Thick<br>ness) | Material<br>Graphic<br>Legend                                                       |
|---------------------------|----|------|---------|-------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-------------------------------------------------------------------------------------|
| Depth                     | No | Type | Results |       |          |                                                                                                                                                        |                          |                                                                                     |
| 0.45                      | 1  | ES   |         |       |          | TOPSOIL: Dark brown mottled black clayey gravelly SAND. Sand is fine to coarse. Gravel is angular to rounded fine to coarse flint.                     | (0.30)                   |  |
|                           |    |      |         |       |          | Orangish brown sandy gravelly CLAY. Sand is fine to medium. Gravel is angular to subrounded fine to coarse flint.<br>(REWORKED RIVER TERRACE DEPOSITS) | 0.30                     |                                                                                     |
|                           |    |      |         |       |          | Hand pit terminated at 0.50m bgl.                                                                                                                      | 0.50                     |                                                                                     |

1. Hand pit remained dry and stable during excavation
2. Backfilled with arisings
3. Geomembrane observed at 0.25 m. Reworked River terrace deposits, consistent with previous plots, identified below marker membrane.

ARUN DISTRICT COURT used



# TRIAL PIT LOG

|                                                         |                                                |                                                        |                             |                           |  |
|---------------------------------------------------------|------------------------------------------------|--------------------------------------------------------|-----------------------------|---------------------------|--|
| Contract:<br><b>Land at West End Nursery, Angmering</b> |                                                | Client:<br><b>Cala Homes (South Home Counties) Ltd</b> |                             | Trial Pit:<br><b>HDP4</b> |  |
| Contract Ref:<br><b>27621</b>                           | Start: <b>24.05.17</b><br>End: <b>24.05.17</b> | Ground Level:<br><b>---</b>                            | Co-ordinates:<br><b>---</b> | Sheet:<br><b>1 of 1</b>   |  |

| Samples and In-situ Tests |    |      |         | Water | Backfill | Description of Strata                                                                                                                               | Depth (Thickness) | Material Graphic Legend |
|---------------------------|----|------|---------|-------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------------------|
| Depth                     | No | Type | Results |       |          |                                                                                                                                                     |                   |                         |
| 0.20                      | 1  | ES   |         |       |          | TOPSOIL: Dark brown mottled black clayey gravelly SAND. Sand is fine to coarse. Gravel is angular to rounded fine to coarse flint.                  | (0.45)            |                         |
|                           |    |      |         |       |          | Orangish brown sandy gravelly CLAY. Sand is fine to medium. Gravel is angular to subrounded fine to coarse flint. (REWORKED RIVER TERRACE DEPOSITS) | 0.45              |                         |
|                           |    |      |         |       |          | hand pit terminated at 0.60m bgl.                                                                                                                   | 0.60              |                         |

## General Remarks

1. Hand pit remained dry and stable during excavation
2. Backfilled with arisings
3. Geomembrane observed at 0.25 m. Reworked River terrace deposits, consistent with previous plots, identified below marker membrane.

All dimensions in metres

Scale:

**1:25**

Method

Plant

Logged

Checked

Used: **Hand dug**

Used:

**Hand tools**

By:

**CLewis**

By:





| Samples and In-situ Tests |    |      |         | Water | Backfill | Description of Strata                                                                                                                                                | Depth<br>(Thick<br>ness) | Material<br>Graphic<br>Legend                                                       |
|---------------------------|----|------|---------|-------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-------------------------------------------------------------------------------------|
| Depth                     | No | Type | Results |       |          |                                                                                                                                                                      |                          |                                                                                     |
| 0.10                      | 1  | ES   | ES      |       |          | TOPSOIL: Mid to dark brown, sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is subrounded to subangular fine to medium of flint.                        | (0.30)                   |  |
| 0.40                      | 2  | D    |         |       |          | Light brown orange silty slightly gravelly SAND. Sand is fine to medium. Gravel is sub-rounded to rounded fine to medium of flint. (REWORKED RIVER TERRACE DEPOSITS) | 0.30                     |  |
|                           |    |      |         |       |          | Hand pit terminated at 0.70m bgl                                                                                                                                     | 0.50                     |  |

1. Hand pit remained dry and stable during excavations
2. Backfilled with arisings

ARUN DISTRICT COURT Case No. 155/21/DOC



TRIAL PIT LOG

|                                                         |  |                                                        |                             |                             |                         |
|---------------------------------------------------------|--|--------------------------------------------------------|-----------------------------|-----------------------------|-------------------------|
| Contract:<br><b>Land at West End Nursery, Angmering</b> |  | Client:<br><b>Cala Homes (South Home Counties) Ltd</b> |                             | Trial Pit:<br><b>HDPF2</b>  |                         |
| Contract Ref:<br><b>27621</b>                           |  | Start: <b>07.06.17</b><br>End: <b>07.06.17</b>         | Ground Level:<br><b>---</b> | Co-ordinates:<br><b>---</b> | Sheet:<br><b>1 of 1</b> |

| Samples and In-situ Tests |    |      |         | Water | Backfill | Description of Strata                                                                                                               | Depth (Thickness) | Material Graphic Legend                                                             |
|---------------------------|----|------|---------|-------|----------|-------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------------------------------------------------------------------------------|
| Depth                     | No | Type | Results |       |          |                                                                                                                                     |                   |                                                                                     |
| 0.10                      | 1  | ES   | ES      |       |          | TOPSOIL: Dark brown clayey slightly gravelly SAND. Sand is fine to medium. Gravel is subrounded to rounded fine to medium of flint. | (0.35)            |  |
|                           |    |      |         |       |          | Light brown orange clayey SAND. Sand is fine to medium. (REWORKED RIVER TERRACE DEPOSITS)                                           | 0.35              |                                                                                     |
|                           |    |      |         |       |          | Hand pit terminated at 0.45m bgl.                                                                                                   | 0.45              |  |

|                                                                                      |  |                               |                    |                                                                                                   |
|--------------------------------------------------------------------------------------|--|-------------------------------|--------------------|---------------------------------------------------------------------------------------------------|
| General Remarks                                                                      |  |                               |                    |                                                                                                   |
| 1. Hand pit remained dry and stable during excavation<br>2. Backfilled with arisings |  |                               |                    |                                                                                                   |
| All dimensions in metres                                                             |  |                               | Scale: <b>1:25</b> |                                                                                                   |
| Method Used: <b>Hand dug</b>                                                         |  | Plant Used: <b>Hand tools</b> |                    | Logged By: <b>JLaite</b>                                                                          |
|                                                                                      |  |                               |                    | Checked By:  |



| Samples and In-situ Tests |    |      |         | Water | Backfill | Description of Strata                                                                                                                                                                                     | Depth<br>(Thick<br>ness) | Material<br>Graphic<br>Legend                                                       |
|---------------------------|----|------|---------|-------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-------------------------------------------------------------------------------------|
| Depth                     | No | Type | Results |       |          |                                                                                                                                                                                                           |                          |                                                                                     |
| 0.10                      | 1  | D    | ES      |       |          | TOPSOIL: Dark brown clayey slightly gravelly SAND. Sand is fine to medium. Gravel is subrounded to rounded fine to medium of flint.                                                                       | (0.30)                   |  |
| 0.40                      | 2  | ES   |         |       |          | Light brown orange clayey slightly gravelly SAND. Sand is fine to medium. Gravel is subrounded to rounded fine to coarse of flint. (REWORKED RIVER TERRACE DEPOSITS)<br>Hand pit terminated at 0.50m bgl. | 0.50                     |                                                                                     |

1. Hand pit remained dry and stable during excavation.
2. Backfilled with arisings

ARUN DISTRICT COURT Case No. 155/21/DOC



| Samples and In-situ Tests |    |      |         | Water | Backfill | Description of Strata                                                                                                               | Depth<br>(Thick<br>ness) | Material<br>Graphic<br>Legend                                                       |
|---------------------------|----|------|---------|-------|----------|-------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-------------------------------------------------------------------------------------|
| Depth                     | No | Type | Results |       |          |                                                                                                                                     |                          |                                                                                     |
| 0.20                      | 1  | ES   | ES      |       |          | TOPSOIL: Dark brown clayey slightly gravelly SAND. Sand is fine to medium. Gravel is subrounded to rounded fine to medium of flint. | (0.30)                   |  |
| 0.40                      | 2  | D    |         |       |          | Light brown silty CLAY. (REWORKED RIVER TERRACE DEPOSITS)                                                                           | 0.30                     |  |
|                           |    |      |         |       |          | Hand pit terminated at 0.55m bgl.                                                                                                   | 0.55                     |  |

1. Hand pit remained dry and stable during excavation
2. Backfilled with arisings

|                          |        |             |
|--------------------------|--------|-------------|
| All dimensions in metres | Scale: | <b>1:25</b> |
|--------------------------|--------|-------------|

ARUN DISTRICT COURT used V/155/21/DOC



**APPENDIX D**  
**TOPSOIL VALIDATION CERTIFICATES**

Info

**From:** Caleb McIntyre | Eurogreen [REDACTED]  
**Sent:** 27 February 2017 13:32  
**To:** Info  
**Subject:** BS3882 Topsoil  
**Attachments:** BS3882 Batch 4 OCLA16637sk.pdf

Good afternoon Paul

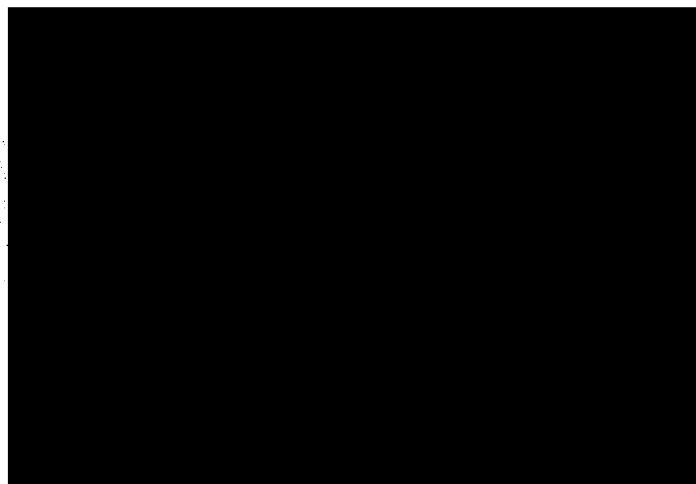
Further to our discussions please find attached BS3882 Cert for the soil being delivered to your site tomorrow.

Kind Regards

Caleb McIntyre | Eurogreen | 07880 358770

**EUROGREEN**  
ENVIRONMENTAL

GREENWASTE RECYCLING & LANDSCAPING SUPPLIES



|                 |                                                                              |
|-----------------|------------------------------------------------------------------------------|
| Client Address: | Eurogreen, North Barn Farm, Titnore Lane, Worthing,<br>West Sussex, BN12 6NZ |
| Our ref:        | OCLA16637sk                                                                  |
| Client Ref:     | Verbal Caleb                                                                 |
| Date:           | 21 October 2016                                                              |



OEMachem Ltd  
Unit 4 Westwood Court  
Brunel Road, Totton,  
Southampton  
SO40 3WX

### Soil Analysis Test against BS 3882

|            |            |            |            |
|------------|------------|------------|------------|
| Sampled    | 10/10/2016 | Report No  | 16-08988   |
| Received   | 11/10/2016 | Sample ref | 76756      |
| Product    | Soil       | Location   |            |
| Sampled By | Client     | Site       | Batch Four |

Table 1 : Soil Texture (% m/m)

| Texture            | Method | Sample          | Multipurpose Topsoil Range | Specific Purpose Range                                           |            |               |                      |                          |
|--------------------|--------|-----------------|----------------------------|------------------------------------------------------------------|------------|---------------|----------------------|--------------------------|
|                    |        |                 |                            | Acidic                                                           | Calcareous | Low Fertility | Low fertility Acidic | Low fertility Calcareous |
| Clay Content       | 5.05   | 17              |                            | 5 to 35                                                          |            |               |                      |                          |
| Silt Content       | 5.05   | 37              |                            | 0 to 65                                                          |            |               |                      |                          |
| Sand Content       | 5.05   | 39              |                            | 30 to 85                                                         |            |               |                      |                          |
| Soil Texture Class | 5.05   | Sandy Silt Loam |                            | Note: See soil texture triangle in BS3882:2015 for allowed soils |            |               |                      |                          |

Table 2 : Mass Loss on ignition (%)

|                 | Method | Sample | Multipurpose Topsoil Range | Specific Purpose Range |            |               |                      |                          |
|-----------------|--------|--------|----------------------------|------------------------|------------|---------------|----------------------|--------------------------|
|                 |        |        |                            | Acidic                 | Calcareous | Low Fertility | Low fertility Acidic | Low fertility Calcareous |
| Clay (5 – 20 %) | 6.07   | 5.66   | 3 to 20                    | 3 to 30                | 3 to 20    | 2 to 20       | 2 to 30              | 2 to 20                  |
| Clay (20 – 35%) | -      |        | 5 to 20                    | 5 to 30                | 5 to 20    | 2 to 20       | 2 to 30              | 2 to 20                  |

Table 3: Maximum Coarse Fragment Content (% ( m/m ))

|         | Sample | Multipurpose Topsoil Range | Specific Purpose Range |            |               |                      |                          |
|---------|--------|----------------------------|------------------------|------------|---------------|----------------------|--------------------------|
|         |        |                            | Acidic                 | Calcareous | Low Fertility | Low fertility Acidic | Low fertility Calcareous |
| > 2 mm  | 7      |                            | 0 – 30                 |            |               |                      |                          |
| > 20 mm | <1     |                            | 0 – 10                 |            |               |                      |                          |
| > 50 mm | <1     |                            | 0                      |            |               |                      |                          |

Table 4: Chemical Analysis (air-dried, sieved (< 2 mm) soil)

| Analyte       | Method | Sample | Multipurpose Topsoil Range | Specific Purpose Range |            |               |                      |                          |
|---------------|--------|--------|----------------------------|------------------------|------------|---------------|----------------------|--------------------------|
|               |        |        |                            | Acidic                 | Calcareous | Low Fertility | Low fertility Acidic | Low fertility Calcareous |
| Soil pH Value | 5.03   | 7.7    | 5.5 – 8.5                  | 3.5 – 5.5              | 7.5 – 9.0  | 3.5 – 9.0     | 3.5 – 5.5            | 7.5 – 9.0                |
| Carbonate (%) | 6.07   | 2.6    | —                          | —                      | >1         | —             |                      | > 1                      |

Table 5: Available Plant Nutrient Content

|                                                   | Method | Sample | Multipurpose<br>Topsoil Range | Specific Purpose Range |            |               |                         |                             |
|---------------------------------------------------|--------|--------|-------------------------------|------------------------|------------|---------------|-------------------------|-----------------------------|
|                                                   |        |        |                               | Acidic                 | Calcareous | Low Fertility | Low fertility<br>Acidic | Low fertility<br>Calcareous |
| Nitrogen % m/m                                    |        | 0.4    | >0.15                         | >0.15                  | >0.15      | -             | -                       | -                           |
| Extractable Phosphate mg/l                        | 6.08   | 93     | 16 - 140                      | 16 - 140               | 16 - 140   | <20           | <20                     | <20                         |
| Extractable Potassium mg/l                        | 6.08   | 369    | 121 - 1500                    | 121 - 1500             | 121 - 1500 | -             | -                       | -                           |
| Extractable Magnesium                             | 6.08   | 213    | 51 - 600                      | 51 - 600               | 51 - 600   | -             | -                       | -                           |
| Carbon:Nitrogen ratio                             | 6.08   | 15:1   | < 20:1                        | < 20:1                 | < 20:1     | <35:1         | <35:1                   | <20:1                       |
| Soil Electrical Conductivity                      |        | 2670   | 3300                          |                        |            |               |                         |                             |
| Exchangeable sodium<br>percentage % <sup>1)</sup> | 6.08   | N/A    | < 15                          |                        |            |               |                         |                             |

<sup>1)</sup> Need be measured only if the electrical conductivity is greater than 2800

Table 6: Phytotoxic Contaminants (by soil pH) (mg/kg) analyses carried out on air dried samples

|               | Method | Sample | Multipurpose and specific purpose topsoils |           |       |
|---------------|--------|--------|--------------------------------------------|-----------|-------|
| Soil pH Range |        |        | < 6.0                                      | 6.0 - 7.0 | > 7.0 |
| Zinc          | 6.08   | 111    | < 200                                      | < 200     | < 300 |
| Copper        | 6.08   | 26     | < 100                                      | < 135     | < 200 |
| Nickel        | 6.08   | 18.5   | < 60                                       | < 75      | < 110 |

Table 7: Additional Physical characteristics

|                            | Method | Sample | Multipurpose and specific purpose topsoils |
|----------------------------|--------|--------|--------------------------------------------|
| Plastics                   | 6.01   | <0.01  | 0.25%                                      |
| Sharps                     | 6.07   | 0      | 0%                                         |
| Total Visible contaminants | —      | <0.01  | <0.5%                                      |

Comments (including details of weeds and other visible contaminants - all comments are beyond the scope of our accreditation)

This sample does meet the requirements of BS3882 and is compliant to the following:

|                   | Multipurpose<br>Topsoil Range | Specific Purpose Range |            |               |                         |                             |
|-------------------|-------------------------------|------------------------|------------|---------------|-------------------------|-----------------------------|
|                   |                               | Acidic                 | Calcareous | Low Fertility | Low fertility<br>Acidic | Low fertility<br>Calcareous |
| <b>Compliant:</b> | YES                           | NO                     | YES        | No            | No                      | No                          |

Mark Chiverton  
Managing Director  
Oemachem Ltd

Our Ref: 23571/CH/CD/609

Email

01<sup>st</sup> March 2017,

**FAO Mr. S Lee**

CALA Homes (South Home Counties) Limited  
Tilford House  
Farnham Business Park  
Weydon Lane  
Farnham  
Surrey  
GU9 8QT

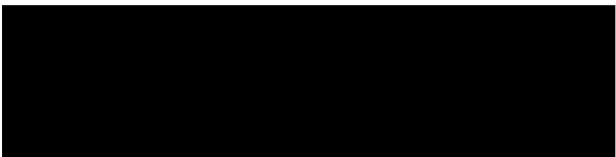
Dear Sir

Re: Contract at Angmering

With reference to the above contract we attach certificate for imported topsoil for the bund.

Assuring you of our best attention at all times.

Yours faithfully,

  
**Chas Howe**  
**BLAZE CONSTRUCTION LTD**

Enc

cc: Miss Elaine Broderick, Mr Sean Alger

# EUROGREEN ENVIRONMENTAL

## CONVEYANCE WASTE TRANSFER NOTE

Note No: 1316

SUPPLIERS OF: COMPOST TOPSOIL TURF LOGS WOODCHIP HORSE MANURE AGGREGATES

Collected From: EUROGREEN Date: 28-02-17

Customer Name: BLAZE CONSTRUCTION Time:

Site Address: TITNORE LANE

WORTHING

Description of material: TOPSOIL

Cubic Metres  
Collected:



Tonnes  
Collected:

20

EWC Code(s):

Vehicle Reg. No: WN61 JXX

Company Name Receiving Waste/Material: BLAZE CONSTRUCTION

Address: % CALA HOMES, ROUNDSTONE LANE

ANGMERING BN16 4AX

Driver  
Signature

I confirm that I have fulfilled my duty to apply the waste hierarchy as requested by Regulation 12 of the Waste (England and Wales) Regulations 2011.

Certified that the above particulars are true and relate to the Waste/Materials being conveyed in the vehicle described, which Waste/Material is being conveyed in pursuance of: a sale or agreement for the sale thereof made by the cubic metre or ton.

CARRIER REG. NO: CBDU58167

North Barn Farm, Titnore Lane, Worthing, West Sussex, BN12 6NZ

# EUROGREEN ENVIRONMENTAL

## CONVEYANCE WASTE TRANSFER NOTE

Note No: 1317

SUPPLIERS OF: COMPOST TOPSOIL TURF LOGS WOODCHIP HORSE MANURE AGGREGATES

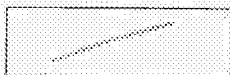
Collected From: EUROGREEN Date: 28-02-17

Customer Name: BLAZE CONSTRUCTION Time:

Site Address: TITNORE LANE  
WORTHING

Description of material: TOPSOIL

Cubic Metres  
Collected:



Tonnes  
Collected:

20

EWG Code(s):

Vehicle Reg. No: WN61 JXX

Company Name Receiving Waste/Material: BLAZE CONSTRUCTION

Address: % CALA HOMES, ROUNDSTONE LANE

ANSMERING BN16 4AX

Driver  
Signature

I confirm to  
Waste (En)

Certified that the above particulars are true and relate to the Waste/Materials being conveyed in the vehicle described, which Waste/Material is being conveyed in pursuance of: a sale or agreement for the sale thereof made by the cubic metre or ton.

CARRIER REG. NO: CBDU58167

North Barn Farm, Titnore Lane, Worthing, West Sussex, BN12 6NZ

# EUROGREEN ENVIRONMENTAL

## CONVEYANCE WASTE TRANSFER NOTE

Note No: 1318

SUPPLIERS OF: COMPOST TOPSOIL TURF LOGS WOODCHIP HORSE MANURE AGGREGATES

Collected From: EUROGREEN Date: 28-02-17

Customer Name: BLAZE CONSTRUCTION Time:

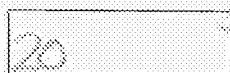
Site Address: TITNORE LANE  
WORTHING

Description of material: TOPSOIL

Cubic Metres  
Collected:



Tonnes  
Collected:



EWC Code(s):

Vehicle Reg. No: WN61 JXX

Company Name Receiving Waste/Material: BLAZE CONSTRUCTION

Address: % CALA HOMES, ROUNDSTONE LANE

ANGMERING, BN16 4AX

Driver

Signature:

I confirm that I am a registered carrier under the Waste (England and Wales) Regulations 2011.

Certified that the above particulars are true and relate to the Waste/Materials being conveyed in the vehicle described, which Waste/Material is being conveyed in pursuance of: a sale or agreement for the sale thereof made by the cubic metre or ton.

CARRIER REG. NO: CBDU58167

North Barn Farm, Titnore Lane, Worthing, West Sussex, BN12 6NZ

# EUROGREEN ENVIRONMENTAL

## CONVEYANCE WASTE TRANSFER NOTE

Note No: 1319

SUPPLIERS OF: COMPOST TOPSOIL TURF LOGS WOODCHIP HORSE MANURE AGGREGATES

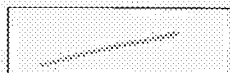
Collected From: EUROGREEN Date: 28-02-17

Customer Name: BLAZE CONSTRUCTION Time:

Site Address: TITNORE LANE  
WORTHING

Description of material: TOPSOIL

Cubic Metres  
Collected:



Tonnes  
Collected:

20

EWC Code(s):

Vehicle Reg. No: WN61 JXX

Company Name Receiving Waste/Material: BLAZE CONSTRUCTION

Address: C/O CALA HOMES ROUNDSTONE LANE,

ANGMERING BN16 4AX

Driver

Signature:

entirely on their own responsibility

I confirm that I have fulfilled my duty to apply the waste hierarchy as requested by Regulation 12 of the Waste (England and Wales) Regulations 2011.

Certified that the above particulars are true and relate to the Waste/Materials being conveyed in the vehicle described, which Waste/Material is being conveyed in pursuance of: a sale or agreement for the sale thereof made by the cubic metre or ton.

CARRIER REG. NO: CBDU58167

North Barn Farm, Titnore Lane, Worthing, West Sussex, BN12 6NZ

# EUROGREEN ENVIRONMENTAL

## CONVEYANCE WASTE TRANSFER NOTE

Note No: 1320

SUPPLIERS OF: COMPOST TOPSOIL TURF LOGS WOODCHIP HORSE MANURE AGGREGATES

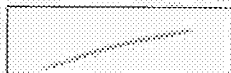
Collected From: EUROGREEN Date: 28-02-17

Customer Name: BLAZE CONSTRUCTION Time:

Site Address: TITNORE LANE  
WORTHING

Description of material: TOPSOIL

Cubic Metres  
Collected:



Tonnes  
Collected:

20

EWC Code(s):

Vehicle Reg. No: WN61 JXK

Company Name Receiving Waste/Material: BLAZE CONSTRUCTION

Address: 9 CALA HOMES, BOUNDSTONE LANE

ANGMERING BN16 4AX

Driver

Signature

[Redacted Signature]

Customers ordering vehicles on the public highway do so  
entirely on their own responsibility

I confirm that I have fulfilled my duty to apply the waste hierarchy as requested by Regulation 12 of the  
Waste (England and Wales) Regulations 2011.

Certified that the above particulars are true and relate to the Waste/Materials being conveyed in the  
vehicle described, which Waste/Material is being conveyed in pursuance of: a sale or agreement for the  
use thereof made by the cubic metre or ton.

CARRIER REG. NO: CBDU58167

North Barn Farm, Titnore Lane, Worthing, West Sussex, BN12 6NZ

# EUROGREEN ENVIRONMENTAL

## CONVEYANCE WASTE TRANSFER NOTE

Note No: 1321

SUPPLIERS OF: COMPOST TOPSOIL TURF LOGS WOODCHIP HORSE MANURE AGGREGATES

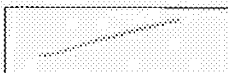
Collected From: EUROGREEN Date: 28-02-17

Customer Name: BLAZE CONSTRUCTION Time:

Site Address: TITNORE LANE  
WORTHING

Description of material: TOPSOIL

Cubic Metres  
Collected:



Tonnes  
Collected:



EW Code(s):

Vehicle Reg. No: WN61 JXX

Company Name Receiving Waste/Material: BLAZE CONSTRUCTION

Address: 50 CALA HOMES, ROUNDSTONE LANE

ANSMERING BN16 4AX

Driver

Signature:



entirely on their own responsibility

I confirm that I have fulfilled my duty to apply the waste hierarchy as requested by Regulation 12 of the Waste (England and Wales) Regulations 2011.

Certified that the above particulars are true and relate to the Waste/Materials being conveyed in the vehicle described, which Waste/Material is being conveyed in pursuance of: a sale or agreement for the use thereof made by the cubic metre or ton.

CARRIER REG. NO: CBDU58167

North Barn Farm, Titnore Lane, Worthing, West Sussex, BN12 6NZ

# EUROGREEN ENVIRONMENTAL

## CONVEYANCE WASTE TRANSFER NOTE

Note No: 1322

SUPPLIERS OF: COMPOST TOPSOIL TURF LOGS WOODCHIP HORSE MANURE AGGREGATES

Collected From: EUROGREEN

Date: 28-02-17

Customer Name: BLAZE CONSTRUCTION

Time:

Site Address: TITNORE LANE

WORTHING

Description of material: TOPSOIL

Cubic Metres  
Collected:



Tonnes  
Collected:

20

EWC Code(s):

Vehicle Reg. No: WNG1JXK

Company Name Receiving Waste/Material: BLAZE CONSTRUCTION

Address: % CALA HOMES ROUNDSTONE LANE

ANGMERING BN16 4AX

Driver

Signature:

I confirm that I have fulfilled my duty to apply the waste hierarchy as requested by Regulation 12 of the Waste (England and Wales) Regulations 2011.

Certified that the above particulars are true and relate to the Waste/Materials being conveyed in the vehicle described, which Waste/Material is being conveyed in pursuance of: a sale or agreement for the sale thereof made by the cubic metre or ton.

CARRIER REG. NO: CBDU58167

North Barn Farm, Titnore Lane, Worthing, West Sussex, BN12 6NZ

# EUROGREEN ENVIRONMENTAL

## CONVEYANCE WASTE TRANSFER NOTE

Note No: 1323

SUPPLIERS OF: COMPOST TOPSOIL TURF LOGS WOODCHIP HORSE MANURE AGGREGATES

Collected From: EUROGREEN Date: 28-02-17

Customer Name: BLAZE CONSTRUCTION Time:

Site Address: TITNORE LANE

WORTHING

Description of material: TOPSOIL

Cubic Metres  
Collected:



Tonnes  
Collected:

20

EWC Code(s):

Vehicle Reg. No: WN61 JXX

Company Name Receiving Waste/Material: BLAZE CONSTRUCTION

Address: 50 CALA HOMES, ROUNDSTONE LANE

ANSMERING, BN16 4AX

Driver

Signature: ...



Customers ordering services on the public highway do so entirely on their own responsibility

I confirm that I have fulfilled my duty to apply the waste hierarchy as requested by Regulation 12 of the Waste (England and Wales) Regulations 2011.

Certified that the above particulars are true and relate to the Waste/Materials being conveyed in the vehicle described, which Waste/Material is being conveyed in pursuance of: a sale or agreement for the sale thereof made by the cubic metre or ton.

CARRIER REG. NO: CBDU58167

North Barn Farm, Titnore Lane, Worthing, West Sussex, BN12 6NZ

# EUROGREEN ENVIRONMENTAL

## CONVEYANCE WASTE TRANSFER NOTE

Note No: 1324

SUPPLIERS OF: COMPOST TOPSOIL TURF LOGS WOODCHIP HORSE MANURE AGGREGATES

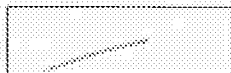
Collected From: EUROGREEN Date: 28-02-17

Customer Name: BLAZE CONSTRUCTION Time:

Site Address: TITNORE LANE  
WORTHING

Description of material: TOPSOIL

Cubic Metres  
Collected:



Tonnes  
Collected:

20

EWC Code(s):

Vehicle Reg. No: WN61 JXK

Company Name Receiving Waste/Material: BLAZE CONSTRUCTION

Address: c/o CALA HOMES, ROUNDSTONE LANE

ANEMERING, BN16 4AX

Driver

Signature:



Customers ordering vehicles on the public highway do so  
entirely on their own responsibility

I confirm that I have fulfilled my duty to apply the waste hierarchy as requested by Regulation 12 of the  
Waste (England and Wales) Regulations 2011.

Certified that the above particulars are true and relate to the Waste/Materials being conveyed in the  
vehicle described, which Waste/Material is being conveyed in pursuance of: a sale or agreement for the  
use thereof made by the cubic metre or ton.

CARRIER REG. NO: CBDU58167

North Barn Farm, Titnore Lane, Worthing, West Sussex, BN12 6NZ

# EUROGREEN ENVIRONMENTAL

## CONVEYANCE WASTE TRANSFER NOTE

Note No: 1586

SUPPLIERS OF: COMPOST TOPSOIL TURF LOGS WOODCHIP HORSE MANURE AGGREGATES

Collected From: EUROGREEN Date:                     

Customer Name: WASTE COLLECTION Time:                     

Site Address:                     

Description of material: 12 TONS TOPSOIL

Cubic Metres  
Collected:

Tonnes  
Collected:

EWG Code(s):                     

Vehicle Reg. No: V 562 YDP

Company Name Receiving Waste/Material:                     

Address:                     

Driver  
Signature:



Customers ordering services on the public highway do so entirely on their own responsibility

I confirm that I have fulfilled my duty to apply the waste hierarchy as requested by Regulation 12 of the Waste (England and Wales) Regulations 2011.

Certified that the above particulars are true and relate to the Waste/Materials being conveyed in the vehicle described, which Waste/Material is being conveyed in pursuance of: a sale or agreement for the sale thereof made by the cubic metre or ton.

CARRIER REG. NO: CBDU58167

North Barn Farm, Titnore Lane, Worthing, West Sussex, BN12 6NZ

# EUROGREEN ENVIRONMENTAL

## CONVEYANCE WASTE TRANSFER NOTE

Note No: 1587

SUPPLIERS OF: COMPOST TOPSOIL TURF LOGS WOODCHIP HORSE MANURE AGGREGATES

Collected From: EUROGREEN Date: 25.2.14

Customer Name: BLAKE CONSTRUCTION Time: 10.00

Site Address: COOP WORKS

Description of material: 10 TONS TOPSOIL

Cubic Metres  
Collected:

Tonnes  
Collected:

EWC Code(s):

Vehicle Reg. No: Y502 KDD

Company Name Receiving Waste/Material:

Address:

Driver

Signature:



Customers ordering vehicles on the public highway do so entirely on their own responsibility

I confirm that I have fulfilled my duty to apply the waste hierarchy as requested by Regulation 12 of the Waste (England and Wales) Regulations 2011.

Certified that the above particulars are true and relate to the Waste/Materials being conveyed in the vehicle described, which Waste/Material is being conveyed in pursuance of: a sale or agreement for the sale thereof made by the cubic metre or ton.

CARRIER REG. NO: CBDU58167

North Barn Farm, Titnore Lane, Worthing, West Sussex, BN12 6NZ

# EUROGREEN ENVIRONMENTAL

## CONVEYANCE WASTE TRANSFER NOTE

Note No: 1588

SUPPLIERS OF: COMPOST TOPSOIL TURF LOGS WOODCHIP HORSE MANURE AGGREGATES

Collected From: EUROGREEN

Date: 26-2-11

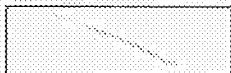
Customer Name: Stone Construction

Time: 12:30

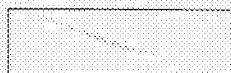
Site Address: CHURCH LANE

Description of material: 10 TONS TOPSOIL

Cubic Metres  
Collected:



Tonnes  
Collected:



EWG Code(s):

Vehicle Reg. No: X502 FDC

Company Name Receiving Waste/Material:

Address:

Driver  
Signature



I confirm that I have fulfilled my duty to apply the waste hierarchy as requested by Regulation 12 of the Waste (England and Wales) Regulations 2011.

Certified that the above particulars are true and relate to the Waste/Materials being conveyed in the vehicle described, which Waste/Material is being conveyed in pursuance of: a sale or agreement for the sale thereof made by the cubic metre or ton.

CARRIER REG. NO: CBDU58167

North Barn Farm, Titnore Lane, Worthing, West Sussex, BN12 6NZ

# EUROGREEN ENVIRONMENTAL

## CONVEYANCE WASTE TRANSFER NOTE

Note No: 1589

SUPPLIERS OF: COMPOST TOPSOIL TURF LOGS WOODCHIP HORSE MANURE AGGREGATES

Collected From: EUROGREEN Date: Dec 2 2011

Customer Name: St. Paul's Convent Time: 16:15

Site Address: Cole House

Description of material: 10 Trunk Top Soil

Cubic Metres  
Collected:

Tonnes  
Collected:

EWC Code(s):

Vehicle Reg. No: Y562 RDD

Company Name Receiving Waste/Material:

Address:

Driver  
Signature

[Redacted Signature]

entirely on their own responsibility

I confirm that I have fulfilled my duty to apply the waste hierarchy as requested by Regulation 12 of the Waste (England and Wales) Regulations 2011.

Certified that the above particulars are true and relate to the Waste/Materials being conveyed in the vehicle described, which Waste/Material is being conveyed in pursuance of: a sale or agreement for the sale thereof made by the cubic metre or ton.

CARRIER REG. NO: CBDU58167

North Barn Farm, Titnore Lane, Worthing, West Sussex, BN12 6NZ

# EUROGREEN ENVIRONMENTAL

## CONVEYANCE WASTE TRANSFER NOTE

Note No: 1590

SUPPLIERS OF: COMPOST TOPSOIL TURF LOGS WOODCHIP HORSE MANURE AGGREGATES

Collected From: EUROGREEN Date: 26.2.12

Customer Name: SHARPE CO - FARM Time: 15:00

Site Address: SALAD HATCH

Description of material: 12 TONS JACKSON

Cubic Metres  
Collected:

Tonnes  
Collected:

EWC Code(s):

Vehicle Reg. No: Y5 12 FDC

Company Name Receiving Waste/Material:

Address:

Driver  
Signature



entirely on their own responsibility

I confirm that I have fulfilled my duty to apply the waste hierarchy as requested by Regulation 12 of the Waste (England and Wales) Regulations 2011.

Certified that the above particulars are true and relate to the Waste/Materials being conveyed in the vehicle described, which Waste/Material is being conveyed in pursuance of: a sale or agreement for the sale thereof made by the cubic metre or ton.

CARRIER REG. NO: CBDU58167

North Barn Farm, Tiltmore Lane, Worthing, West Sussex, BN12 6NZ

# EUROGREEN ENVIRONMENTAL

## CONVEYANCE WASTE TRANSFER NOTE

Note No: 1591

SUPPLIERS OF: COMPOST TOPSOIL TURF LOGS WOODCHIP HORSE MANURE AGGREGATES

Collected From: EUROGREEN Date: 26.2.11

Customer Name: SLATE CONCRETE Time: 16.30

Site Address: 50A HORNES

Description of material: 10 TONS TOPSOIL

Cubic Metres  
Collected:

Tonnes  
Collected:

EWC Code(s):

Vehicle Reg. No: Y512 FOL

Company Name Receiving Waste/Material:

Address:

Driver  
Signature



entirely on their own responsibility

I confirm that I have fulfilled my duty to apply the waste hierarchy as requested by Regulation 12 of the Waste (England and Wales) Regulations 2011.

Certified that the above particulars are true and relate to the Waste/Materials being conveyed in the vehicle described, which Waste/Material is being conveyed in pursuance of: a sale or agreement for the sale thereof made by the cubic metre or ton.

CARRIER REG. NO: C8DU58167

North Barn Farm, Titnore Lane, Worthing, West Sussex, BN12 6NZ

# EUROGREEN ENVIRONMENTAL

CONVEYANCE WASTE  
TRANSFER NOTE  
Note No. 1331

SUPPLIERS OF: COMPOST TOPSOIL TURF LOGS WOODCHIP HORSE MANURE AGGREGATES

Collected From: EUROGREEN Date: 02-03-17

Customer Name: PAUL COOPER LTD Time: 10:00

Site Address: TIMORE LANE

WORTHING

Description of material: TOPSOIL

Cubic Metres Collected: 1 Tonnes Collected: 20

EMC Code(s):

Vehicle Reg. No: YNK1 JXK

Company Name Receiving Waste/Material: BLAZE CONSTRUCTION

Address: 50 CALA WILES, ROCHESTER, BN16 4AX

ANGLIA

entirely on their own responsibility

I confirm that I have fulfilled my duty to apply the waste hierarchy as requested by Regulation 12 of the Waste (England and Wales) Regulations 2011.

Certified that the above particulars are true and relate to the Waste/Materials being conveyed in the vehicle described, which Waste/Material is being conveyed in pursuance of a sale or agreement for the sale thereof made by the cubic metre or ton.

CARRIER REG. NO: CBD056167

North Barn Farm, Timore Lane, Worthing, West Sussex, BN12 6NZ

# EUROGREEN ENVIRONMENTAL

CONVEYANCE WASTE  
TRANSFER NOTE

Note No: 1325

SUPPLIERS OF: COMPOST TOPSOIL TURF LOGS WOODCHIP HORSE MANURE AGGREGATES

Collected From: EUROGREEN Date: 01-03-17

Customer Name: BLAZE CONSTRUCTION Time: .....

Site Address: TIMORE LANE

Description of material: TOPSOIL

Cubic Metres Collected: ☐ Tonnes Collected: ☐ 20

EMC Code(s):

Vehicle Reg. No: LN61 JXK

Company Name Receiving Waste/Material: BLAZE CONSTRUCTION

Address: 40 CALA HONES, POUNDSTONE LANE

I confirm that I have fulfilled my duty to apply the waste hierarchy as requested by Regulation 12 of the Waste (England and Wales) Regulations 2011.

Certified that the above particulars are true and relate to the Waste/Materials being conveyed in the vehicle described, which Waste/Material is being conveyed in pursuance of a sale or agreement for the sale thereof made by the cubic metre or ton.

CARRIER REG. NO: CB0U58167

North Barn Farm, Timore Lane, Worthing, West Sussex, BN12 6NZ

ARUN DISTRICT COUNCIL A15521.DOC

# EUROGREEN ENVIRONMENTAL

CONVEYANCE WASTE  
TRANSFER NOTE

Note No: 1326

SUPPLIERS OF: COMPOST TOPSOIL TURF LOGS WOODCHIP HORSE MANURE AGGREGATES

Collected From: EUROGREEN Date: 01-03-17

Customer Name: BLAZE CONSTRUCTION Time: .....

Site Address: TIMORE LANE

Description of material: TOPSOIL

Cubic Metres Collected: ☐ Tonnes Collected: ☐ 20

EMC Code(s):

Vehicle Reg. No: LN61 JXK

Company Name Receiving Waste/Material: BLAZE CONSTRUCTION

Address: 40 CALA HONES, POUNDSTONE LANE

I confirm that I have fulfilled my duty to apply the waste hierarchy as requested by Regulation 12 of the Waste (England and Wales) Regulations 2011.

Certified that the above particulars are true and relate to the Waste/Materials being conveyed in the vehicle described, which Waste/Material is being conveyed in pursuance of a sale or agreement for the sale thereof made by the cubic metre or ton.

CARRIER REG. NO: CB0U58167

North Barn Farm, Timore Lane, Worthing, West Sussex, BN12 6NZ

# EUROGREEN

## ENVIRONMENTAL

CONVEYANCE WASTE  
TRANSFER NOTE

Note No: 1327

SUPPLIERS OF: COMPOST TOPSOIL TURF LOGS WOODCHIP HORSE MANURE AGGREGATES

Collected From: EUROGREEN Date: 01-03-17

Customer Name: BUZZE CONSTRUCTION Time: .....

Site Address: TIMORE LANE

Description of material: TOPSOIL

Cubic Metres Collected: ☒ Tonnes Collected: ☐ 20

EMC Code(s): .....

Vehicle Reg. No: W1161 JXX

Company Name Receiving Waste/Material: BUZZE CONSTRUCTION

Address: 1/2 CANA HOMES, ROUNDSTONE LANE

I confirm that I have fulfilled my duty to apply the waste hierarchy as requested by Regulation 12 of the Waste (England and Wales) Regulations 2011.

Certified that the above particulars are true and relate to the Waste/Materials being conveyed in the vehicle described, which Waste/Material is being conveyed in pursuance of a sale or agreement for the sale thereof made by the cubic metre or ton.

CARRIER REG. NO: CB0U38167

North Baim Farm, Timore Lane, Worthing, West Sussex, BN12 6NZ  
ARMN DISTRICT COUNCIL A15521.DOC

# EUROGREEN

## ENVIRONMENTAL

CONVEYANCE WASTE  
TRANSFER NOTE

Note No: 1592

SUPPLIERS OF: COMPOST TOPSOIL TURF LOGS WOODCHIP HORSE MANURE AGGREGATES

Collected From: EUROGREEN Date: 15-3-17

Customer Name: BUZZE CONSTRUCTION Time: 11:30

Site Address: 1/2 CANA HOMES, ROUNDSTONE LANE

Description of material: TOPSOIL

Cubic Metres Collected: ☒ Tonnes Collected: ☐

EMC Code(s): .....

Vehicle Reg. No: W1161 JXX

Company Name Receiving Waste/Material: .....

Address: .....

I confirm that I have fulfilled my duty to apply the waste hierarchy as requested by Regulation 12 of the Waste (England and Wales) Regulations 2011.

Certified that the above particulars are true and relate to the Waste/Materials being conveyed in the vehicle described, which Waste/Material is being conveyed in pursuance of a sale or agreement for the sale thereof made by the cubic metre or ton.

CARRIER REG. NO: CB0U38167

North Baim Farm, Timore Lane, Worthing, West Sussex, BN12 6NZ

CONVEYANCE WAST  
TRANSFER NOTE  
Note No: 1593

Note No. 133

SUPPLIERS OF: COMPOST TURF LOSS WOODCHIP HORSE MANURE AGGREGATE

Date: .....

Time: \_\_\_\_\_

| Names<br>Collected: |  |
|---------------------|--|
|                     |  |

.....

.....

.....

entirely on their own responsibility.

I confirm that I have fulfilled my duty to apply the waste hierarchy as requested by Regulation 12 of the Waste (England and Wales) Regulations 2011.

Certified that the above particulars are true and relate to the Waste/Materials being conveyed in the vehicle described, which Waste/Materials is being conveyed in pursuance of a sale or agreement for the sale thereof made by the cubic metre or ton

CARRIER REF. NO: C80058167

North Eain Farm, Tipton Lane, Worthing, West Sussex, BN12 6NZ  
NDISTRICT COUNCIL A15521100C



## **APPENDIX E**

### **LABORATORY CERTIFICATES**

## FINAL ANALYTICAL TEST REPORT

**Envirolab Job Number:** 17/03669  
**Issue Number:** 1  
**Date:** 07 June, 2017

**Client:** RSK Environment Ltd Romsey  
Unit 18 Basepoint Abbey Enterprise Centre  
Premier Way  
Romsey  
Hampshire  
SO51 9AQ

**Project Manager:** Cathy Latimer/Craig Lewis  
**Project Name:** Former West End Nursery, Angmering  
**Project Ref:** 27621  
**Order No:** N/A  
**Date Samples Received:** 26/05/17  
**Date Instructions Received:** 30/05/17  
**Date Analysis Completed:** 07/06/17

**Prepared by:**

**Approved by:**



Kate Keningale  
Administrative Assistant

Iain Haslock  
Analytical Consultant

Envirolab Job Number: 17/03669

Client Project Name: Former West End Nursery, Angmering

Client Project Ref: 27621

| Lab Sample ID                                       | 17/03669/1 | 17/03669/2 | 17/03669/3 | 17/03669/4 | 17/03669/5 | 17/03669/6 | 17/03669/7 | 17/03669/8 | Units | Method ref |
|-----------------------------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|-------|------------|
| Client Sample No                                    |            |            |            |            |            |            |            |            |       |            |
| Client Sample ID                                    | HDP02      | HDP03      | HDP04      | HDP05      | HDP06      | HDP20      | HDP21      | HDP22      |       |            |
| Depth to Top                                        | 0.30       | 0.40       | 0.20       | 0.30       | 0.45       | 0.30       | 0.20       | 0.30       |       |            |
| Depth To Bottom                                     |            |            |            |            |            |            |            |            |       |            |
| Date Sampled                                        | 24-May-17  | 24-May-17  | 24-May-17  | 24-May-17  | 24-May-17  | 24-May-17  | 24-May-17  | 24-May-17  |       |            |
| Sample Type                                         | Soil - ES  | Soil - ES  | Soil - ES  | Soil - ES  | Soil - ES  | Soil - ES  | Soil - ES  | Soil - ES  |       |            |
| Sample Matrix Code                                  | 7          | 6A         | 4AE        | 4AE        | 5A         | 1A         | 1A         | 1A         |       |            |
| % Stones >10mm <sub>A</sub> <sup>#</sup>            | <0.1       | 0.7        | 1.1        | 3.5        | 23.2       | 6.7        | 31.2       | 27.8       | % w/w | A-T-044    |
| pH <sub>D</sub> <sup>M#</sup>                       | 8.19       | 7.81       | 7.40       | 7.50       | 8.00       | 8.35       | 8.18       | 8.16       | pH    | A-T-031s   |
| Sulphate (water sol 2:1) <sub>D</sub> <sup>M#</sup> | 0.02       | 0.04       | 0.03       | 0.04       | 0.03       | 0.03       | 0.02       | <0.01      | g/l   | A-T-026s   |
| Sulphate (acid soluble) <sub>D</sub> <sup>M#</sup>  | <200       | 280        | 200        | 230        | <200       | <200       | <200       | <200       | mg/kg | A-T-028s   |
| Arsenic <sub>D</sub> <sup>M#</sup>                  | 2          | <1         | <1         | <1         | 2          | 4          | 3          | 2          | mg/kg | A-T-024s   |
| Cadmium <sub>D</sub> <sup>M#</sup>                  | 0.5        | 0.7        | <0.5       | <0.5       | 0.7        | <0.5       | <0.5       | <0.5       | mg/kg | A-T-024s   |
| Copper <sub>D</sub> <sup>M#</sup>                   | 9          | 13         | 9          | 10         | 6          | 5          | 5          | 3          | mg/kg | A-T-024s   |
| Chromium <sub>D</sub> <sup>M#</sup>                 | 22         | 31         | 17         | 17         | 16         | 14         | 14         | 9          | mg/kg | A-T-024s   |
| Chromium (hexavalent) <sub>D</sub>                  | <1         | <1         | <1         | <1         | <1         | <1         | <1         | <1         | mg/kg | A-T-040s   |
| Lead <sub>D</sub> <sup>M#</sup>                     | 13         | 19         | 13         | 14         | 8          | 7          | 7          | 4          | mg/kg | A-T-024s   |
| Mercury <sub>D</sub>                                | <0.17      | <0.17      | <0.17      | <0.17      | <0.17      | <0.17      | <0.17      | <0.17      | mg/kg | A-T-024s   |
| Nickel <sub>D</sub> <sup>M#</sup>                   | 16         | 22         | 15         | 15         | 16         | 13         | 13         | 7          | mg/kg | A-T-024s   |
| Selenium <sub>D</sub>                               | <1         | <1         | <1         | <1         | <1         | <1         | <1         | <1         | mg/kg | A-T-024s   |
| Zinc <sub>D</sub> <sup>M#</sup>                     | 35         | 58         | 35         | 35         | 32         | 23         | 23         | 17         | mg/kg | A-T-024s   |

Envirolab Job Number: 17/03669

Client Project Name: Former West End Nursery, Angmering

Client Project Ref: 27621

|                                                    |            |            |            |            |            |            |            |            |       |            |
|----------------------------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|-------|------------|
| Lab Sample ID                                      | 17/03669/1 | 17/03669/2 | 17/03669/3 | 17/03669/4 | 17/03669/5 | 17/03669/6 | 17/03669/7 | 17/03669/8 | Units | Method ref |
| Client Sample No                                   |            |            |            |            |            |            |            |            |       |            |
| Client Sample ID                                   | HDP02      | HDP03      | HDP04      | HDP05      | HDP06      | HDP20      | HDP21      | HDP22      |       |            |
| Depth to Top                                       | 0.30       | 0.40       | 0.20       | 0.30       | 0.45       | 0.30       | 0.20       | 0.30       |       |            |
| Depth To Bottom                                    |            |            |            |            |            |            |            |            |       |            |
| Date Sampled                                       | 24-May-17  | 24-May-17  | 24-May-17  | 24-May-17  | 24-May-17  | 24-May-17  | 24-May-17  | 24-May-17  |       |            |
| Sample Type                                        | Soil - ES  | Soil - ES  | Soil - ES  | Soil - ES  | Soil - ES  | Soil - ES  | Soil - ES  | Soil - ES  |       |            |
| Sample Matrix Code                                 | 7          | 6A         | 4AE        | 4AE        | 5A         | 1A         | 1A         | 1A         |       |            |
| Asbestos in Soil (inc. matrix)                     |            |            |            |            |            |            |            |            |       |            |
| Asbestos in soil <sup>#</sup>                      | NAD        | NAD        | NAD        | NAD        | NAD        | NAD        | NAD        | NAD        |       | A-T-045    |
| Asbestos ACM - Suitable for Water Absorption Test? | N/A        | N/A        | N/A        | N/A        | N/A        | N/A        | N/A        | N/A        |       |            |

Envirolab Job Number: 17/03669

Client Project Name: Former West End Nursery, Angmering

Client Project Ref: 27621

| Lab Sample ID                                    | 17/03669/1 | 17/03669/2 | 17/03669/3 | 17/03669/4 | 17/03669/5 | 17/03669/6 | 17/03669/7 | 17/03669/8 | Units | Method ref |
|--------------------------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|-------|------------|
| Client Sample No                                 |            |            |            |            |            |            |            |            |       |            |
| Client Sample ID                                 | HDP02      | HDP03      | HDP04      | HDP05      | HDP06      | HDP20      | HDP21      | HDP22      |       |            |
| Depth to Top                                     | 0.30       | 0.40       | 0.20       | 0.30       | 0.45       | 0.30       | 0.20       | 0.30       |       |            |
| Depth To Bottom                                  |            |            |            |            |            |            |            |            |       |            |
| Date Sampled                                     | 24-May-17  | 24-May-17  | 24-May-17  | 24-May-17  | 24-May-17  | 24-May-17  | 24-May-17  | 24-May-17  |       |            |
| Sample Type                                      | Soil - ES  | Soil - ES  | Soil - ES  | Soil - ES  | Soil - ES  | Soil - ES  | Soil - ES  | Soil - ES  |       |            |
| Sample Matrix Code                               | 7          | 6A         | 4AE        | 4AE        | 5A         | 1A         | 1A         | 1A         |       |            |
| PAH 16                                           |            |            |            |            |            |            |            |            |       |            |
| Acenaphthene <sub>A</sub> <sup>M#</sup>          | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | mg/kg | A-T-019s   |
| Acenaphthylene <sub>A</sub> <sup>M#</sup>        | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | mg/kg | A-T-019s   |
| Anthracene <sub>A</sub> <sup>M#</sup>            | <0.02      | <0.02      | <0.02      | <0.02      | <0.02      | <0.02      | <0.02      | <0.02      | mg/kg | A-T-019s   |
| Benzo(a)anthracene <sub>A</sub> <sup>M#</sup>    | <0.04      | <0.04      | <0.04      | <0.04      | <0.04      | <0.04      | <0.04      | <0.04      | mg/kg | A-T-019s   |
| Benzo(a)pyrene <sub>A</sub> <sup>M#</sup>        | <0.04      | <0.04      | <0.04      | 0.05       | <0.04      | <0.04      | <0.04      | <0.04      | mg/kg | A-T-019s   |
| Benzo(b)fluoranthene <sub>A</sub> <sup>M#</sup>  | <0.05      | <0.05      | <0.05      | 0.06       | <0.05      | <0.05      | <0.05      | <0.05      | mg/kg | A-T-019s   |
| Benzo(ghi)perylene <sub>A</sub> <sup>M#</sup>    | <0.05      | <0.05      | <0.05      | 0.07       | <0.05      | <0.05      | <0.05      | <0.05      | mg/kg | A-T-019s   |
| Benzo(k)fluoranthene <sub>A</sub> <sup>M#</sup>  | <0.07      | <0.07      | <0.07      | <0.07      | <0.07      | <0.07      | <0.07      | <0.07      | mg/kg | A-T-019s   |
| Chrysene <sub>A</sub> <sup>M#</sup>              | <0.06      | <0.06      | <0.06      | <0.06      | <0.06      | <0.06      | <0.06      | <0.06      | mg/kg | A-T-019s   |
| Dibenzo(ah)anthracene <sub>A</sub> <sup>M#</sup> | <0.04      | <0.04      | <0.04      | <0.04      | <0.04      | <0.04      | <0.04      | <0.04      | mg/kg | A-T-019s   |
| Fluoranthene <sub>A</sub> <sup>M#</sup>          | <0.08      | <0.08      | 0.10       | 0.10       | <0.08      | <0.08      | <0.08      | <0.08      | mg/kg | A-T-019s   |
| Fluorene <sub>A</sub> <sup>M#</sup>              | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | mg/kg | A-T-019s   |
| Indeno(123-cd)pyrene <sub>A</sub> <sup>M#</sup>  | <0.03      | <0.03      | 0.04       | 0.07       | <0.03      | <0.03      | <0.03      | <0.03      | mg/kg | A-T-019s   |
| Naphthalene <sub>A</sub> <sup>M#</sup>           | <0.03      | <0.03      | <0.03      | <0.03      | <0.03      | <0.03      | <0.03      | <0.03      | mg/kg | A-T-019s   |
| Phenanthrene <sub>A</sub> <sup>M#</sup>          | <0.03      | <0.03      | <0.03      | <0.03      | 0.13       | <0.03      | <0.03      | <0.03      | mg/kg | A-T-019s   |
| Pyrene <sub>A</sub> <sup>M#</sup>                | <0.07      | <0.07      | <0.07      | <0.07      | <0.07      | <0.07      | <0.07      | <0.07      | mg/kg | A-T-019s   |
| PAH (total 16) <sub>A</sub> <sup>M#</sup>        | <0.08      | <0.08      | 0.15       | 0.36       | 0.15       | <0.08      | <0.08      | <0.08      | mg/kg | A-T-019s   |

Envirolab Job Number: 17/03669

Client Project Name: Former West End Nursery, Angmering

Client Project Ref: 27621

| Lab Sample ID                                  | 17/03669/1 | 17/03669/2 | 17/03669/3 | 17/03669/4 | 17/03669/5 | 17/03669/6 | 17/03669/7 | 17/03669/8 | Units | Method ref |
|------------------------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|-------|------------|
| Client Sample No                               |            |            |            |            |            |            |            |            |       |            |
| Client Sample ID                               | HDP02      | HDP03      | HDP04      | HDP05      | HDP06      | HDP20      | HDP21      | HDP22      |       |            |
| Depth to Top                                   | 0.30       | 0.40       | 0.20       | 0.30       | 0.45       | 0.30       | 0.20       | 0.30       |       |            |
| Depth To Bottom                                |            |            |            |            |            |            |            |            |       |            |
| Date Sampled                                   | 24-May-17  | 24-May-17  | 24-May-17  | 24-May-17  | 24-May-17  | 24-May-17  | 24-May-17  | 24-May-17  |       |            |
| Sample Type                                    | Soil - ES  | Soil - ES  | Soil - ES  | Soil - ES  | Soil - ES  | Soil - ES  | Soil - ES  | Soil - ES  |       |            |
| Sample Matrix Code                             | 7          | 6A         | 4AE        | 4AE        | 5A         | 1A         | 1A         | 1A         |       |            |
| TPH CWG                                        |            |            |            |            |            |            |            |            |       |            |
| Ali >C5-C6 <sub>A</sub> <sup>#</sup>           | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | mg/kg | A-T-022s   |
| Ali >C6-C8 <sub>A</sub> <sup>#</sup>           | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | mg/kg | A-T-022s   |
| Ali >C8-C10 <sub>A</sub> <sup>#</sup>          | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | mg/kg | A-T-022s   |
| Ali >C10-C12 <sub>A</sub> <sup>#</sup>         | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | mg/kg | A-T-023s   |
| Ali >C12-C16 <sub>A</sub> <sup>#</sup>         | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | mg/kg | A-T-023s   |
| Ali >C16-C21 <sub>A</sub> <sup>#</sup>         | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | mg/kg | A-T-023s   |
| Ali >C21-C35 <sub>A</sub> <sup>#</sup>         | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | mg/kg | A-T-023s   |
| Total Aliphatics <sub>A</sub>                  | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | mg/kg | A-T-023s   |
| Aro >C5-C7 <sub>A</sub> <sup>#</sup>           | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | mg/kg | A-T-022s   |
| Aro >C7-C8 <sub>A</sub> <sup>#</sup>           | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | mg/kg | A-T-022s   |
| Aro >C8-C9 <sub>A</sub> <sup>#</sup>           | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | mg/kg | A-T-022s   |
| Aro >C9-C10 <sub>A</sub> <sup>#</sup>          | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | mg/kg | A-T-022s   |
| Aro >C10-C12 <sub>A</sub> <sup>#</sup>         | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | mg/kg | A-T-023s   |
| Aro >C12-C16 <sub>A</sub> <sup>#</sup>         | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | mg/kg | A-T-023s   |
| Aro >C16-C21 <sub>A</sub> <sup>#</sup>         | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | mg/kg | A-T-023s   |
| Aro >C21-C35 <sub>A</sub> <sup>#</sup>         | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | mg/kg | A-T-023s   |
| Total Aromatics <sub>A</sub>                   | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | mg/kg | A-T-023s   |
| TPH (Ali & Aro) <sub>A</sub>                   | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | mg/kg | A-T-023s   |
| BTEX - Benzene <sub>A</sub> <sup>#</sup>       | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | mg/kg | A-T-022s   |
| BTEX - Toluene <sub>A</sub> <sup>#</sup>       | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | mg/kg | A-T-022s   |
| BTEX - Ethyl Benzene <sub>A</sub> <sup>#</sup> | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | mg/kg | A-T-022s   |
| BTEX - m & p Xylene <sub>A</sub> <sup>#</sup>  | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | mg/kg | A-T-022s   |
| BTEX - o Xylene <sub>A</sub> <sup>#</sup>      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | mg/kg | A-T-022s   |
| MTBE <sub>A</sub> <sup>#</sup>                 | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | mg/kg | A-T-022s   |

Envirolab Job Number: 17/03669/9

Client Project Name: Former West End Nursery, Angmering

Client Project Ref: 27621

|                                                     |            |  |  |  |  |  |  |  |       |            |
|-----------------------------------------------------|------------|--|--|--|--|--|--|--|-------|------------|
| Lab Sample ID                                       | 17/03669/9 |  |  |  |  |  |  |  | Units | Method ref |
| Client Sample No                                    |            |  |  |  |  |  |  |  |       |            |
| Client Sample ID                                    | HDP23      |  |  |  |  |  |  |  |       |            |
| Depth to Top                                        | 0.30       |  |  |  |  |  |  |  |       |            |
| Depth To Bottom                                     |            |  |  |  |  |  |  |  |       |            |
| Date Sampled                                        | 24-May-17  |  |  |  |  |  |  |  |       |            |
| Sample Type                                         | Soil - ES  |  |  |  |  |  |  |  |       |            |
| Sample Matrix Code                                  | 1A         |  |  |  |  |  |  |  |       |            |
| % Stones >10mm <sub>A</sub> <sup>#</sup>            | 13.6       |  |  |  |  |  |  |  | % w/w | A-T-044    |
| pH <sub>D</sub> <sup>M#</sup>                       | 8.10       |  |  |  |  |  |  |  | pH    | A-T-031s   |
| Sulphate (water sol 2:1) <sub>D</sub> <sup>M#</sup> | 0.02       |  |  |  |  |  |  |  | g/l   | A-T-026s   |
| Sulphate (acid soluble) <sub>D</sub> <sup>M#</sup>  | <200       |  |  |  |  |  |  |  | mg/kg | A-T-028s   |
| Arsenic <sub>D</sub> <sup>M#</sup>                  | 3          |  |  |  |  |  |  |  | mg/kg | A-T-024s   |
| Cadmium <sub>D</sub> <sup>M#</sup>                  | <0.5       |  |  |  |  |  |  |  | mg/kg | A-T-024s   |
| Copper <sub>D</sub> <sup>M#</sup>                   | 3          |  |  |  |  |  |  |  | mg/kg | A-T-024s   |
| Chromium <sub>D</sub> <sup>M#</sup>                 | 9          |  |  |  |  |  |  |  | mg/kg | A-T-024s   |
| Chromium (hexavalent) <sub>D</sub>                  | <1         |  |  |  |  |  |  |  | mg/kg | A-T-040s   |
| Lead <sub>D</sub> <sup>M#</sup>                     | 5          |  |  |  |  |  |  |  | mg/kg | A-T-024s   |
| Mercury <sub>D</sub>                                | <0.17      |  |  |  |  |  |  |  | mg/kg | A-T-024s   |
| Nickel <sub>D</sub> <sup>M#</sup>                   | 8          |  |  |  |  |  |  |  | mg/kg | A-T-024s   |
| Selenium <sub>D</sub>                               | <1         |  |  |  |  |  |  |  | mg/kg | A-T-024s   |
| Zinc <sub>D</sub> <sup>M#</sup>                     | 18         |  |  |  |  |  |  |  | mg/kg | A-T-024s   |

Envirolab Job Number: 17/03669

Client Project Name: Former West End Nursery, Angmering

Client Project Ref: 27621

|                                                    |            |  |  |  |  |  |  |  |       |            |
|----------------------------------------------------|------------|--|--|--|--|--|--|--|-------|------------|
| Lab Sample ID                                      | 17/03669/9 |  |  |  |  |  |  |  | Units | Method ref |
| Client Sample No                                   |            |  |  |  |  |  |  |  |       |            |
| Client Sample ID                                   | HDP23      |  |  |  |  |  |  |  |       |            |
| Depth to Top                                       | 0.30       |  |  |  |  |  |  |  |       |            |
| Depth To Bottom                                    |            |  |  |  |  |  |  |  |       |            |
| Date Sampled                                       | 24-May-17  |  |  |  |  |  |  |  |       |            |
| Sample Type                                        | Soil - ES  |  |  |  |  |  |  |  |       |            |
| Sample Matrix Code                                 | 1A         |  |  |  |  |  |  |  |       |            |
| Asbestos in Soil (inc. matrix)                     |            |  |  |  |  |  |  |  |       |            |
| Asbestos in soil <sup>#</sup>                      | NAD        |  |  |  |  |  |  |  |       | A-T-045    |
| Asbestos ACM - Suitable for Water Absorption Test? | N/A        |  |  |  |  |  |  |  |       |            |

Envirolab Job Number: 17/03669

Client Project Name: Former West End Nursery, Angmering

Client Project Ref: 27621

|                                                  |            |  |  |  |  |  |  |  |       |            |
|--------------------------------------------------|------------|--|--|--|--|--|--|--|-------|------------|
| Lab Sample ID                                    | 17/03669/9 |  |  |  |  |  |  |  | Units | Method ref |
| Client Sample No                                 |            |  |  |  |  |  |  |  |       |            |
| Client Sample ID                                 | HDP23      |  |  |  |  |  |  |  |       |            |
| Depth to Top                                     | 0.30       |  |  |  |  |  |  |  |       |            |
| Depth To Bottom                                  |            |  |  |  |  |  |  |  |       |            |
| Date Sampled                                     | 24-May-17  |  |  |  |  |  |  |  |       |            |
| Sample Type                                      | Soil - ES  |  |  |  |  |  |  |  |       |            |
| Sample Matrix Code                               | 1A         |  |  |  |  |  |  |  |       |            |
| PAH 16                                           |            |  |  |  |  |  |  |  |       |            |
| Acenaphthene <sub>A</sub> <sup>M#</sup>          | <0.01      |  |  |  |  |  |  |  | mg/kg | A-T-019s   |
| Acenaphthylene <sub>A</sub> <sup>M#</sup>        | <0.01      |  |  |  |  |  |  |  | mg/kg | A-T-019s   |
| Anthracene <sub>A</sub> <sup>M#</sup>            | <0.02      |  |  |  |  |  |  |  | mg/kg | A-T-019s   |
| Benzo(a)anthracene <sub>A</sub> <sup>M#</sup>    | <0.04      |  |  |  |  |  |  |  | mg/kg | A-T-019s   |
| Benzo(a)pyrene <sub>A</sub> <sup>M#</sup>        | <0.04      |  |  |  |  |  |  |  | mg/kg | A-T-019s   |
| Benzo(b)fluoranthene <sub>A</sub> <sup>M#</sup>  | <0.05      |  |  |  |  |  |  |  | mg/kg | A-T-019s   |
| Benzo(ghi)perylene <sub>A</sub> <sup>M#</sup>    | <0.05      |  |  |  |  |  |  |  | mg/kg | A-T-019s   |
| Benzo(k)fluoranthene <sub>A</sub> <sup>M#</sup>  | <0.07      |  |  |  |  |  |  |  | mg/kg | A-T-019s   |
| Chrysene <sub>A</sub> <sup>M#</sup>              | <0.06      |  |  |  |  |  |  |  | mg/kg | A-T-019s   |
| Dibenzo(ah)anthracene <sub>A</sub> <sup>M#</sup> | <0.04      |  |  |  |  |  |  |  | mg/kg | A-T-019s   |
| Fluoranthene <sub>A</sub> <sup>M#</sup>          | <0.08      |  |  |  |  |  |  |  | mg/kg | A-T-019s   |
| Fluorene <sub>A</sub> <sup>M#</sup>              | <0.01      |  |  |  |  |  |  |  | mg/kg | A-T-019s   |
| Indeno(123-cd)pyrene <sub>A</sub> <sup>M#</sup>  | <0.03      |  |  |  |  |  |  |  | mg/kg | A-T-019s   |
| Naphthalene <sub>A</sub> <sup>M#</sup>           | <0.03      |  |  |  |  |  |  |  | mg/kg | A-T-019s   |
| Phenanthrene <sub>A</sub> <sup>M#</sup>          | <0.03      |  |  |  |  |  |  |  | mg/kg | A-T-019s   |
| Pyrene <sub>A</sub> <sup>M#</sup>                | <0.07      |  |  |  |  |  |  |  | mg/kg | A-T-019s   |
| PAH (total 16) <sub>A</sub> <sup>M#</sup>        | <0.08      |  |  |  |  |  |  |  | mg/kg | A-T-019s   |

Envirolab Job Number: 17/03669

Client Project Name: Former West End Nursery, Angmering

Client Project Ref: 27621

|                                                |            |  |  |  |  |  |  |  |       |            |
|------------------------------------------------|------------|--|--|--|--|--|--|--|-------|------------|
| Lab Sample ID                                  | 17/03669/9 |  |  |  |  |  |  |  | Units | Method ref |
| Client Sample No                               |            |  |  |  |  |  |  |  |       |            |
| Client Sample ID                               | HDP23      |  |  |  |  |  |  |  |       |            |
| Depth to Top                                   | 0.30       |  |  |  |  |  |  |  |       |            |
| Depth To Bottom                                |            |  |  |  |  |  |  |  |       |            |
| Date Sampled                                   | 24-May-17  |  |  |  |  |  |  |  |       |            |
| Sample Type                                    | Soil - ES  |  |  |  |  |  |  |  |       |            |
| Sample Matrix Code                             | 1A         |  |  |  |  |  |  |  |       |            |
| TPH CWG                                        |            |  |  |  |  |  |  |  |       |            |
| Ali >C5-C6 <sub>A</sub> <sup>#</sup>           | <0.01      |  |  |  |  |  |  |  | mg/kg | A-T-022s   |
| Ali >C6-C8 <sub>A</sub> <sup>#</sup>           | <0.01      |  |  |  |  |  |  |  | mg/kg | A-T-022s   |
| Ali >C8-C10 <sub>A</sub> <sup>#</sup>          | <0.01      |  |  |  |  |  |  |  | mg/kg | A-T-022s   |
| Ali >C10-C12 <sub>A</sub> <sup>#</sup>         | <0.1       |  |  |  |  |  |  |  | mg/kg | A-T-023s   |
| Ali >C12-C16 <sub>A</sub> <sup>#</sup>         | <0.1       |  |  |  |  |  |  |  | mg/kg | A-T-023s   |
| Ali >C16-C21 <sub>A</sub> <sup>#</sup>         | <0.1       |  |  |  |  |  |  |  | mg/kg | A-T-023s   |
| Ali >C21-C35 <sub>A</sub> <sup>#</sup>         | <0.1       |  |  |  |  |  |  |  | mg/kg | A-T-023s   |
| Total Aliphatics <sub>A</sub>                  | <0.1       |  |  |  |  |  |  |  | mg/kg | A-T-023s   |
| Aro >C5-C7 <sub>A</sub> <sup>#</sup>           | <0.01      |  |  |  |  |  |  |  | mg/kg | A-T-022s   |
| Aro >C7-C8 <sub>A</sub> <sup>#</sup>           | <0.01      |  |  |  |  |  |  |  | mg/kg | A-T-022s   |
| Aro >C8-C9 <sub>A</sub> <sup>#</sup>           | <0.01      |  |  |  |  |  |  |  | mg/kg | A-T-022s   |
| Aro >C9-C10 <sub>A</sub> <sup>#</sup>          | <0.01      |  |  |  |  |  |  |  | mg/kg | A-T-022s   |
| Aro >C10-C12 <sub>A</sub> <sup>#</sup>         | <0.1       |  |  |  |  |  |  |  | mg/kg | A-T-023s   |
| Aro >C12-C16 <sub>A</sub> <sup>#</sup>         | <0.1       |  |  |  |  |  |  |  | mg/kg | A-T-023s   |
| Aro >C16-C21 <sub>A</sub> <sup>#</sup>         | <0.1       |  |  |  |  |  |  |  | mg/kg | A-T-023s   |
| Aro >C21-C35 <sub>A</sub> <sup>#</sup>         | <0.1       |  |  |  |  |  |  |  | mg/kg | A-T-023s   |
| Total Aromatics <sub>A</sub>                   | <0.1       |  |  |  |  |  |  |  | mg/kg | A-T-023s   |
| TPH (Ali & Aro) <sub>A</sub>                   | <0.1       |  |  |  |  |  |  |  | mg/kg | A-T-023s   |
| BTEX - Benzene <sub>A</sub> <sup>#</sup>       | <0.01      |  |  |  |  |  |  |  | mg/kg | A-T-022s   |
| BTEX - Toluene <sub>A</sub> <sup>#</sup>       | <0.01      |  |  |  |  |  |  |  | mg/kg | A-T-022s   |
| BTEX - Ethyl Benzene <sub>A</sub> <sup>#</sup> | <0.01      |  |  |  |  |  |  |  | mg/kg | A-T-022s   |
| BTEX - m & p Xylene <sub>A</sub> <sup>#</sup>  | <0.01      |  |  |  |  |  |  |  | mg/kg | A-T-022s   |
| BTEX - o Xylene <sub>A</sub> <sup>#</sup>      | <0.01      |  |  |  |  |  |  |  | mg/kg | A-T-022s   |
| MTBE <sub>A</sub> <sup>#</sup>                 | <0.01      |  |  |  |  |  |  |  | mg/kg | A-T-022s   |

## **REPORT NOTES**

### **General:**

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

All samples contained within this report, and any received with the same delivery, will be disposed of one month after the date of this report.

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.

### **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.

### **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.

## FINAL ANALYTICAL TEST REPORT

**Envirolab Job Number:** 17/02306  
**Issue Number:** 1

**Date:** 12 April, 2017

**Client:** RSK Environment Ltd Romsey  
Unit 18 Basepoint Abbey Enterprise Centre  
Premier Way  
Romsey  
Hampshire  
SO51 9AQ

**Project Manager:** Cathy Latimer/Craig Lewis  
**Project Name:** Former West End Nursery, Angmering  
**Project Ref:** 27621  
**Order No:** N/A  
**Date Samples Received:** 30/03/17  
**Date Instructions Received:** 30/03/17  
**Date Analysis Completed:** 11/04/17

**Prepared by:**

**Approved by:**

Kate Keningale  
Administrative Assistant

Iain Haslock  
Analytical Consultant

Envirolab Job Number: 17/02306

Client Project Name: Former West End Nursery, Angmering

Client Project Ref: 27621

| Lab Sample ID                                       | 17/02306/1 | 17/02306/2 | 17/02306/3 | 17/02306/4 | 17/02306/5 | 17/02306/6 | 17/02306/7 | 17/02306/8 | Units | Method ref |
|-----------------------------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|-------|------------|
| Client Sample No                                    |            |            |            |            |            |            |            |            |       |            |
| Client Sample ID                                    | HDP01      | HDP28      | HDP29      | HDP30      | HDP31      | HDP32      | HDP33      | HDP34      |       |            |
| Depth to Top                                        | 0.60       | 0.60       | 0.55       | 0.60       | 0.50       | 0.50       | 0.60       | 0.60       |       |            |
| Depth To Bottom                                     |            |            |            |            |            |            |            |            |       |            |
| Date Sampled                                        | 28-Mar-17  | 28-Mar-17  | 28-Mar-17  | 28-Mar-17  | 28-Mar-17  | 28-Mar-17  | 28-Mar-17  | 28-Mar-17  |       |            |
| Sample Type                                         | Soil - ES  | Soil - ES  | Soil - ES  | Soil - ES  | Soil - ES  | Soil - ES  | Soil - ES  | Soil - ES  |       |            |
| Sample Matrix Code                                  | 3A         | 6A         | 3A         | 6A         | 6A         | 6A         | 6A         | 3A         |       |            |
| % Stones >10mm <sub>A</sub> <sup>#</sup>            | 5.8        | 12.3       | 15.5       | 10.1       | <0.1       | <0.1       | 2.2        | 1.1        | % w/w | A-T-044    |
| pH <sub>D</sub> <sup>M#</sup>                       | 8.15       | 7.91       | 7.85       | 8.05       | 7.88       | 7.55       | 7.80       | 7.54       | pH    | A-T-031s   |
| Sulphate (water sol 2:1) <sub>D</sub> <sup>M#</sup> | 0.07       | 0.39       | 0.22       | 0.07       | 0.08       | 0.08       | 0.07       | 0.06       | g/l   | A-T-026s   |
| Sulphate (acid soluble) <sub>D</sub> <sup>M#</sup>  | 280        | 1100       | 540        | 390        | 410        | 420        | 280        | 210        | mg/kg | A-T-028s   |
| Arsenic <sub>D</sub> <sup>M#</sup>                  | 7          | 6          | 6          | 5          | 5          | 6          | 5          | 4          | mg/kg | A-T-024s   |
| Cadmium <sub>D</sub> <sup>M#</sup>                  | 0.8        | 0.7        | 0.7        | 0.7        | 0.6        | 0.7        | 1.0        | 0.9        | mg/kg | A-T-024s   |
| Copper <sub>D</sub> <sup>M#</sup>                   | 9          | 11         | 9          | 13         | 10         | 13         | 9          | 6          | mg/kg | A-T-024s   |
| Chromium <sub>D</sub> <sup>M#</sup>                 | 23         | 19         | 22         | 19         | 19         | 22         | 22         | 18         | mg/kg | A-T-024s   |
| Lead <sub>D</sub> <sup>M#</sup>                     | 16         | 31         | 19         | 26         | 18         | 22         | 33         | 13         | mg/kg | A-T-024s   |
| Mercury <sub>D</sub>                                | <0.17      | <0.17      | <0.17      | <0.17      | <0.17      | <0.17      | <0.17      | <0.17      | mg/kg | A-T-024s   |
| Nickel <sub>D</sub> <sup>M#</sup>                   | 18         | 17         | 17         | 16         | 15         | 18         | 18         | 15         | mg/kg | A-T-024s   |
| Selenium <sub>D</sub>                               | <1         | <1         | <1         | <1         | <1         | <1         | <1         | <1         | mg/kg | A-T-024s   |
| Zinc <sub>D</sub> <sup>M#</sup>                     | 44         | 61         | 47         | 63         | 48         | 56         | 64         | 52         | mg/kg | A-T-024s   |

Envirolab Job Number: 17/02306

Client Project Name: Former West End Nursery, Angmering

Client Project Ref: 27621

|                                                    |            |            |            |            |            |            |            |            |       |            |
|----------------------------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|-------|------------|
| Lab Sample ID                                      | 17/02306/1 | 17/02306/2 | 17/02306/3 | 17/02306/4 | 17/02306/5 | 17/02306/6 | 17/02306/7 | 17/02306/8 | Units | Method ref |
| Client Sample No                                   |            |            |            |            |            |            |            |            |       |            |
| Client Sample ID                                   | HDP01      | HDP28      | HDP29      | HDP30      | HDP31      | HDP32      | HDP33      | HDP34      |       |            |
| Depth to Top                                       | 0.60       | 0.60       | 0.55       | 0.60       | 0.50       | 0.50       | 0.60       | 0.60       |       |            |
| Depth To Bottom                                    |            |            |            |            |            |            |            |            |       |            |
| Date Sampled                                       | 28-Mar-17  | 28-Mar-17  | 28-Mar-17  | 28-Mar-17  | 28-Mar-17  | 28-Mar-17  | 28-Mar-17  | 28-Mar-17  |       |            |
| Sample Type                                        | Soil - ES  | Soil - ES  | Soil - ES  | Soil - ES  | Soil - ES  | Soil - ES  | Soil - ES  | Soil - ES  |       |            |
| Sample Matrix Code                                 | 3A         | 6A         | 3A         | 6A         | 6A         | 6A         | 6A         | 3A         |       |            |
| Asbestos in Soil (inc. matrix)                     |            |            |            |            |            |            |            |            |       |            |
| Asbestos in soil <sup>#</sup>                      | NAD        | NAD        | NAD        | NAD        | NAD        | NAD        | NAD        | NAD        |       | A-T-045    |
| Asbestos ACM - Suitable for Water Absorption Test? | N/A        | N/A        | N/A        | N/A        | N/A        | N/A        | N/A        | N/A        |       |            |

Envirolab Job Number: 17/02306

Client Project Name: Former West End Nursery, Angmering

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| Lab Sample ID                                    | 17/02306/1 | 17/02306/2 | 17/02306/3 | 17/02306/4 | 17/02306/5 | 17/02306/6 | 17/02306/7 | 17/02306/8 | Units | Method ref |
|--------------------------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|-------|------------|
| Client Sample No                                 |            |            |            |            |            |            |            |            |       |            |
| Client Sample ID                                 | HDP01      | HDP28      | HDP29      | HDP30      | HDP31      | HDP32      | HDP33      | HDP34      |       |            |
| Depth to Top                                     | 0.60       | 0.60       | 0.55       | 0.60       | 0.50       | 0.50       | 0.60       | 0.60       |       |            |
| Depth To Bottom                                  |            |            |            |            |            |            |            |            |       |            |
| Date Sampled                                     | 28-Mar-17  | 28-Mar-17  | 28-Mar-17  | 28-Mar-17  | 28-Mar-17  | 28-Mar-17  | 28-Mar-17  | 28-Mar-17  |       |            |
| Sample Type                                      | Soil - ES  | Soil - ES  | Soil - ES  | Soil - ES  | Soil - ES  | Soil - ES  | Soil - ES  | Soil - ES  |       |            |
| Sample Matrix Code                               | 3A         | 6A         | 3A         | 6A         | 6A         | 6A         | 6A         | 3A         |       |            |
| PAH 16                                           |            |            |            |            |            |            |            |            |       |            |
| Acenaphthene <sub>A</sub> <sup>M#</sup>          | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | mg/kg | A-T-019s   |
| Acenaphthylene <sub>A</sub> <sup>M#</sup>        | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | mg/kg | A-T-019s   |
| Anthracene <sub>A</sub> <sup>M#</sup>            | <0.02      | <0.02      | <0.02      | <0.02      | <0.02      | <0.02      | <0.02      | <0.02      | mg/kg | A-T-019s   |
| Benzo(a)anthracene <sub>A</sub> <sup>M#</sup>    | <0.04      | <0.04      | <0.04      | <0.04      | <0.04      | <0.04      | <0.04      | <0.04      | mg/kg | A-T-019s   |
| Benzo(a)pyrene <sub>A</sub> <sup>M#</sup>        | <0.04      | <0.04      | <0.04      | <0.04      | 0.07       | <0.04      | <0.04      | <0.04      | mg/kg | A-T-019s   |
| Benzo(b)fluoranthene <sub>A</sub> <sup>M#</sup>  | <0.05      | <0.05      | <0.05      | <0.05      | <0.05      | <0.05      | <0.05      | <0.05      | mg/kg | A-T-019s   |
| Benzo(ghi)perylene <sub>A</sub> <sup>M#</sup>    | <0.05      | <0.05      | <0.05      | <0.05      | <0.05      | <0.05      | <0.05      | <0.05      | mg/kg | A-T-019s   |
| Benzo(k)fluoranthene <sub>A</sub> <sup>M#</sup>  | <0.07      | <0.07      | <0.07      | <0.07      | <0.07      | <0.07      | <0.07      | <0.07      | mg/kg | A-T-019s   |
| Chrysene <sub>A</sub> <sup>M#</sup>              | <0.06      | <0.06      | <0.06      | <0.06      | <0.06      | <0.06      | <0.06      | <0.06      | mg/kg | A-T-019s   |
| Dibenzo(ah)anthracene <sub>A</sub> <sup>M#</sup> | <0.04      | <0.04      | <0.04      | <0.04      | <0.04      | <0.04      | <0.04      | <0.04      | mg/kg | A-T-019s   |
| Fluoranthene <sub>A</sub> <sup>M#</sup>          | <0.08      | <0.08      | <0.08      | <0.08      | <0.08      | <0.08      | <0.08      | <0.08      | mg/kg | A-T-019s   |
| Fluorene <sub>A</sub> <sup>M#</sup>              | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | 0.01       | <0.01      | mg/kg | A-T-019s   |
| Indeno(123-cd)pyrene <sub>A</sub> <sup>M#</sup>  | <0.03      | <0.03      | <0.03      | <0.03      | <0.03      | <0.03      | <0.03      | <0.03      | mg/kg | A-T-019s   |
| Naphthalene <sub>A</sub> <sup>M#</sup>           | <0.03      | <0.03      | <0.03      | <0.03      | <0.03      | <0.03      | <0.03      | <0.03      | mg/kg | A-T-019s   |
| Phenanthrene <sub>A</sub> <sup>M#</sup>          | <0.03      | <0.03      | <0.03      | <0.03      | 0.04       | <0.03      | 0.04       | <0.03      | mg/kg | A-T-019s   |
| Pyrene <sub>A</sub> <sup>M#</sup>                | <0.07      | <0.07      | <0.07      | <0.07      | <0.07      | <0.07      | <0.07      | <0.07      | mg/kg | A-T-019s   |
| PAH (total 16) <sub>A</sub> <sup>M#</sup>        | <0.08      | <0.08      | <0.08      | <0.08      | 0.11       | <0.08      | <0.08      | <0.08      | mg/kg | A-T-019s   |

Envirolab Job Number: 17/02306

Client Project Name: Former West End Nursery, Angmering

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| Lab Sample ID                                  | 17/02306/1 | 17/02306/2 | 17/02306/3 | 17/02306/4 | 17/02306/5 | 17/02306/6 | 17/02306/7 | 17/02306/8 | Units | Method ref |
|------------------------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|-------|------------|
| Client Sample No                               |            |            |            |            |            |            |            |            |       |            |
| Client Sample ID                               | HDP01      | HDP28      | HDP29      | HDP30      | HDP31      | HDP32      | HDP33      | HDP34      |       |            |
| Depth to Top                                   | 0.60       | 0.60       | 0.55       | 0.60       | 0.50       | 0.50       | 0.60       | 0.60       |       |            |
| Depth To Bottom                                |            |            |            |            |            |            |            |            |       |            |
| Date Sampled                                   | 28-Mar-17  | 28-Mar-17  | 28-Mar-17  | 28-Mar-17  | 28-Mar-17  | 28-Mar-17  | 28-Mar-17  | 28-Mar-17  |       |            |
| Sample Type                                    | Soil - ES  | Soil - ES  | Soil - ES  | Soil - ES  | Soil - ES  | Soil - ES  | Soil - ES  | Soil - ES  |       |            |
| Sample Matrix Code                             | 3A         | 6A         | 3A         | 6A         | 6A         | 6A         | 6A         | 3A         |       |            |
| TPH CWG                                        |            |            |            |            |            |            |            |            |       |            |
| Ali >C5-C6 <sub>A</sub> <sup>#</sup>           | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | mg/kg | A-T-022s   |
| Ali >C6-C8 <sub>A</sub> <sup>#</sup>           | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | mg/kg | A-T-022s   |
| Ali >C8-C10 <sub>A</sub> <sup>#</sup>          | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | mg/kg | A-T-022s   |
| Ali >C10-C12 <sub>A</sub> <sup>#</sup>         | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | mg/kg | A-T-023s   |
| Ali >C12-C16 <sub>A</sub> <sup>#</sup>         | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | mg/kg | A-T-023s   |
| Ali >C16-C21 <sub>A</sub> <sup>#</sup>         | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | mg/kg | A-T-023s   |
| Ali >C21-C35 <sub>A</sub> <sup>#</sup>         | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | mg/kg | A-T-023s   |
| Total Aliphatics <sub>A</sub>                  | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | mg/kg | A-T-023s   |
| Aro >C5-C7 <sub>A</sub> <sup>#</sup>           | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | mg/kg | A-T-022s   |
| Aro >C7-C8 <sub>A</sub> <sup>#</sup>           | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | mg/kg | A-T-022s   |
| Aro >C8-C9 <sub>A</sub> <sup>#</sup>           | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | mg/kg | A-T-022s   |
| Aro >C9-C10 <sub>A</sub> <sup>#</sup>          | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | 0.01       | mg/kg | A-T-022s   |
| Aro >C10-C12 <sub>A</sub> <sup>#</sup>         | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | mg/kg | A-T-023s   |
| Aro >C12-C16 <sub>A</sub> <sup>#</sup>         | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | mg/kg | A-T-023s   |
| Aro >C16-C21 <sub>A</sub> <sup>#</sup>         | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | mg/kg | A-T-023s   |
| Aro >C21-C35 <sub>A</sub> <sup>#</sup>         | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | mg/kg | A-T-023s   |
| Total Aromatics <sub>A</sub>                   | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | mg/kg | A-T-023s   |
| TPH (Ali & Aro) <sub>A</sub>                   | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | mg/kg | A-T-023s   |
| BTEX - Benzene <sub>A</sub> <sup>#</sup>       | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | mg/kg | A-T-022s   |
| BTEX - Toluene <sub>A</sub> <sup>#</sup>       | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | mg/kg | A-T-022s   |
| BTEX - Ethyl Benzene <sub>A</sub> <sup>#</sup> | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | mg/kg | A-T-022s   |
| BTEX - m & p Xylene <sub>A</sub> <sup>#</sup>  | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | mg/kg | A-T-022s   |
| BTEX - o Xylene <sub>A</sub> <sup>#</sup>      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | mg/kg | A-T-022s   |
| MTBE <sub>A</sub> <sup>#</sup>                 | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | <0.01      | mg/kg | A-T-022s   |

## **REPORT NOTES**

### **General:**

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

All samples contained within this report, and any received with the same delivery, will be disposed of one month after the date of this report.

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.

### **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.

### **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.

## FINAL ANALYTICAL TEST REPORT

**Envirolab Job Number:** 17/03937  
**Issue Number:** 1

**Date:** 13 June, 2017

**Client:** RSK Environment Ltd Romsey  
Unit 18 Basepoint Abbey Enterprise Centre  
Premier Way  
Romsey  
Hampshire  
SO51 9AQ

**Project Manager:** Cathy Latimer/Craig Lewis  
**Project Name:** Former West End Nursery, Angmering  
**Project Ref:** 27621  
**Order No:** N/A  
**Date Samples Received:** 09/06/17  
**Date Instructions Received:** 09/06/17  
**Date Analysis Completed:** 13/06/17

**Prepared by:**

**Approved by:**

Melanie Marshall  
Laboratory Coordinator

Iain Haslock  
Analytical Consultant

Envirolab Job Number: 17/03937

Client Project Name: Former West End Nursery, Angmering

Client Project Ref: 27621

|                                                     |            |  |  |  |  |  |  |  |       |            |
|-----------------------------------------------------|------------|--|--|--|--|--|--|--|-------|------------|
| Lab Sample ID                                       | 17/03937/1 |  |  |  |  |  |  |  | Units | Method ref |
| Client Sample No                                    |            |  |  |  |  |  |  |  |       |            |
| Client Sample ID                                    | HDP02FG    |  |  |  |  |  |  |  |       |            |
| Depth to Top                                        | 0.10       |  |  |  |  |  |  |  |       |            |
| Depth To Bottom                                     |            |  |  |  |  |  |  |  |       |            |
| Date Sampled                                        | 07-Jun-17  |  |  |  |  |  |  |  |       |            |
| Sample Type                                         | Soil - ES  |  |  |  |  |  |  |  |       |            |
| Sample Matrix Code                                  | 4A         |  |  |  |  |  |  |  |       |            |
| % Stones >10mm <sub>A</sub> <sup>#</sup>            | <0.1       |  |  |  |  |  |  |  | % w/w | A-T-044    |
| pH <sub>D</sub> <sup>M#</sup>                       | 7.35       |  |  |  |  |  |  |  | pH    | A-T-031s   |
| Sulphate (water sol 2:1) <sub>D</sub> <sup>M#</sup> | 0.05       |  |  |  |  |  |  |  | g/l   | A-T-026s   |
| Sulphate (acid soluble) <sub>D</sub> <sup>M#</sup>  | <200       |  |  |  |  |  |  |  | mg/kg | A-T-028s   |
| Arsenic <sub>D</sub> <sup>M#</sup>                  | 2          |  |  |  |  |  |  |  | mg/kg | A-T-024s   |
| Cadmium <sub>D</sub> <sup>M#</sup>                  | 0.7        |  |  |  |  |  |  |  | mg/kg | A-T-024s   |
| Copper <sub>D</sub> <sup>M#</sup>                   | 9          |  |  |  |  |  |  |  | mg/kg | A-T-024s   |
| Chromium <sub>D</sub> <sup>M#</sup>                 | 21         |  |  |  |  |  |  |  | mg/kg | A-T-024s   |
| Chromium (hexavalent) <sub>D</sub>                  | <1         |  |  |  |  |  |  |  | mg/kg | A-T-040s   |
| Lead <sub>D</sub> <sup>M#</sup>                     | 12         |  |  |  |  |  |  |  | mg/kg | A-T-024s   |
| Mercury <sub>D</sub>                                | <0.17      |  |  |  |  |  |  |  | mg/kg | A-T-024s   |
| Nickel <sub>D</sub> <sup>M#</sup>                   | 20         |  |  |  |  |  |  |  | mg/kg | A-T-024s   |
| Selenium <sub>D</sub>                               | <1         |  |  |  |  |  |  |  | mg/kg | A-T-024s   |
| Zinc <sub>D</sub> <sup>M#</sup>                     | 40         |  |  |  |  |  |  |  | mg/kg | A-T-024s   |

Envirolab Job Number: 17/03937

Client Project Name: Former West End Nursery, Angmering

Client Project Ref: 27621

|                                                    |            |  |  |  |  |  |  |  |       |            |
|----------------------------------------------------|------------|--|--|--|--|--|--|--|-------|------------|
| Lab Sample ID                                      | 17/03937/1 |  |  |  |  |  |  |  | Units | Method ref |
| Client Sample No                                   |            |  |  |  |  |  |  |  |       |            |
| Client Sample ID                                   | HDP02FG    |  |  |  |  |  |  |  |       |            |
| Depth to Top                                       | 0.10       |  |  |  |  |  |  |  |       |            |
| Depth To Bottom                                    |            |  |  |  |  |  |  |  |       |            |
| Date Sampled                                       | 07-Jun-17  |  |  |  |  |  |  |  |       |            |
| Sample Type                                        | Soil - ES  |  |  |  |  |  |  |  |       |            |
| Sample Matrix Code                                 | 4A         |  |  |  |  |  |  |  |       |            |
| Asbestos in Soil (inc. matrix)                     |            |  |  |  |  |  |  |  |       |            |
| Asbestos in soil <sup>#</sup>                      | NAD        |  |  |  |  |  |  |  |       | A-T-045    |
| Asbestos ACM - Suitable for Water Absorption Test? | N/A        |  |  |  |  |  |  |  |       |            |

Envirolab Job Number: 17/03937

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Client Project Ref: 27621

|                                                  |            |  |  |  |  |  |  |  |       |            |
|--------------------------------------------------|------------|--|--|--|--|--|--|--|-------|------------|
| Lab Sample ID                                    | 17/03937/1 |  |  |  |  |  |  |  | Units | Method ref |
| Client Sample No                                 |            |  |  |  |  |  |  |  |       |            |
| Client Sample ID                                 | HDP02FG    |  |  |  |  |  |  |  |       |            |
| Depth to Top                                     | 0.10       |  |  |  |  |  |  |  |       |            |
| Depth To Bottom                                  |            |  |  |  |  |  |  |  |       |            |
| Date Sampled                                     | 07-Jun-17  |  |  |  |  |  |  |  |       |            |
| Sample Type                                      | Soil - ES  |  |  |  |  |  |  |  |       |            |
| Sample Matrix Code                               | 4A         |  |  |  |  |  |  |  |       |            |
| PAH 16                                           |            |  |  |  |  |  |  |  |       |            |
| Acenaphthene <sub>A</sub> <sup>M#</sup>          | <0.01      |  |  |  |  |  |  |  | mg/kg | A-T-019s   |
| Acenaphthylene <sub>A</sub> <sup>M#</sup>        | <0.01      |  |  |  |  |  |  |  | mg/kg | A-T-019s   |
| Anthracene <sub>A</sub> <sup>M#</sup>            | <0.02      |  |  |  |  |  |  |  | mg/kg | A-T-019s   |
| Benzo(a)anthracene <sub>A</sub> <sup>M#</sup>    | <0.04      |  |  |  |  |  |  |  | mg/kg | A-T-019s   |
| Benzo(a)pyrene <sub>A</sub> <sup>M#</sup>        | <0.04      |  |  |  |  |  |  |  | mg/kg | A-T-019s   |
| Benzo(b)fluoranthene <sub>A</sub> <sup>M#</sup>  | <0.05      |  |  |  |  |  |  |  | mg/kg | A-T-019s   |
| Benzo(ghi)perylene <sub>A</sub> <sup>M#</sup>    | <0.05      |  |  |  |  |  |  |  | mg/kg | A-T-019s   |
| Benzo(k)fluoranthene <sub>A</sub> <sup>M#</sup>  | <0.07      |  |  |  |  |  |  |  | mg/kg | A-T-019s   |
| Chrysene <sub>A</sub> <sup>M#</sup>              | <0.06      |  |  |  |  |  |  |  | mg/kg | A-T-019s   |
| Dibenzo(ah)anthracene <sub>A</sub> <sup>M#</sup> | <0.04      |  |  |  |  |  |  |  | mg/kg | A-T-019s   |
| Fluoranthene <sub>A</sub> <sup>M#</sup>          | <0.08      |  |  |  |  |  |  |  | mg/kg | A-T-019s   |
| Fluorene <sub>A</sub> <sup>M#</sup>              | <0.01      |  |  |  |  |  |  |  | mg/kg | A-T-019s   |
| Indeno(123-cd)pyrene <sub>A</sub> <sup>M#</sup>  | <0.03      |  |  |  |  |  |  |  | mg/kg | A-T-019s   |
| Naphthalene <sub>A</sub> <sup>M#</sup>           | <0.03      |  |  |  |  |  |  |  | mg/kg | A-T-019s   |
| Phenanthrene <sub>A</sub> <sup>M#</sup>          | <0.03      |  |  |  |  |  |  |  | mg/kg | A-T-019s   |
| Pyrene <sub>A</sub> <sup>M#</sup>                | <0.07      |  |  |  |  |  |  |  | mg/kg | A-T-019s   |
| PAH (total 16) <sub>A</sub> <sup>M#</sup>        | <0.08      |  |  |  |  |  |  |  | mg/kg | A-T-019s   |

Envirolab Job Number: 17/03937

Client Project Name: Former West End Nursery, Angmering

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|                                                |            |  |  |  |  |  |  |  |       |            |
|------------------------------------------------|------------|--|--|--|--|--|--|--|-------|------------|
| Lab Sample ID                                  | 17/03937/1 |  |  |  |  |  |  |  | Units | Method ref |
| Client Sample No                               |            |  |  |  |  |  |  |  |       |            |
| Client Sample ID                               | HDP02FG    |  |  |  |  |  |  |  |       |            |
| Depth to Top                                   | 0.10       |  |  |  |  |  |  |  |       |            |
| Depth To Bottom                                |            |  |  |  |  |  |  |  |       |            |
| Date Sampled                                   | 07-Jun-17  |  |  |  |  |  |  |  |       |            |
| Sample Type                                    | Soil - ES  |  |  |  |  |  |  |  |       |            |
| Sample Matrix Code                             | 4A         |  |  |  |  |  |  |  |       |            |
| TPH CWG                                        |            |  |  |  |  |  |  |  |       |            |
| Ali >C5-C6 <sub>A</sub> <sup>#</sup>           | <0.01      |  |  |  |  |  |  |  | mg/kg | A-T-022s   |
| Ali >C6-C8 <sub>A</sub> <sup>#</sup>           | <0.01      |  |  |  |  |  |  |  | mg/kg | A-T-022s   |
| Ali >C8-C10 <sub>A</sub> <sup>#</sup>          | <0.01      |  |  |  |  |  |  |  | mg/kg | A-T-022s   |
| Ali >C10-C12 <sub>A</sub> <sup>#</sup>         | <0.1       |  |  |  |  |  |  |  | mg/kg | A-T-023s   |
| Ali >C12-C16 <sub>A</sub> <sup>#</sup>         | <0.1       |  |  |  |  |  |  |  | mg/kg | A-T-023s   |
| Ali >C16-C21 <sub>A</sub> <sup>#</sup>         | <0.1       |  |  |  |  |  |  |  | mg/kg | A-T-023s   |
| Ali >C21-C35 <sub>A</sub> <sup>#</sup>         | <0.1       |  |  |  |  |  |  |  | mg/kg | A-T-023s   |
| Total Aliphatics <sub>A</sub>                  | <0.1       |  |  |  |  |  |  |  | mg/kg | A-T-023s   |
| Aro >C5-C7 <sub>A</sub> <sup>#</sup>           | <0.01      |  |  |  |  |  |  |  | mg/kg | A-T-022s   |
| Aro >C7-C8 <sub>A</sub> <sup>#</sup>           | <0.01      |  |  |  |  |  |  |  | mg/kg | A-T-022s   |
| Aro >C8-C9 <sub>A</sub> <sup>#</sup>           | <0.01      |  |  |  |  |  |  |  | mg/kg | A-T-022s   |
| Aro >C9-C10 <sub>A</sub> <sup>#</sup>          | <0.01      |  |  |  |  |  |  |  | mg/kg | A-T-022s   |
| Aro >C10-C12 <sub>A</sub> <sup>#</sup>         | <0.1       |  |  |  |  |  |  |  | mg/kg | A-T-023s   |
| Aro >C12-C16 <sub>A</sub> <sup>#</sup>         | <0.1       |  |  |  |  |  |  |  | mg/kg | A-T-023s   |
| Aro >C16-C21 <sub>A</sub> <sup>#</sup>         | <0.1       |  |  |  |  |  |  |  | mg/kg | A-T-023s   |
| Aro >C21-C35 <sub>A</sub> <sup>#</sup>         | <0.1       |  |  |  |  |  |  |  | mg/kg | A-T-023s   |
| Total Aromatics <sub>A</sub>                   | <0.1       |  |  |  |  |  |  |  | mg/kg | A-T-023s   |
| TPH (Ali & Aro) <sub>A</sub>                   | <0.1       |  |  |  |  |  |  |  | mg/kg | A-T-023s   |
| BTEX - Benzene <sub>A</sub> <sup>#</sup>       | <0.01      |  |  |  |  |  |  |  | mg/kg | A-T-022s   |
| BTEX - Toluene <sub>A</sub> <sup>#</sup>       | <0.01      |  |  |  |  |  |  |  | mg/kg | A-T-022s   |
| BTEX - Ethyl Benzene <sub>A</sub> <sup>#</sup> | <0.01      |  |  |  |  |  |  |  | mg/kg | A-T-022s   |
| BTEX - m & p Xylene <sub>A</sub> <sup>#</sup>  | <0.01      |  |  |  |  |  |  |  | mg/kg | A-T-022s   |
| BTEX - o Xylene <sub>A</sub> <sup>#</sup>      | <0.01      |  |  |  |  |  |  |  | mg/kg | A-T-022s   |
| MTBE <sub>A</sub> <sup>#</sup>                 | <0.01      |  |  |  |  |  |  |  | mg/kg | A-T-022s   |

## **REPORT NOTES**

### **General:**

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

All samples contained within this report, and any received with the same delivery, will be disposed of one month after the date of this report.

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.

### **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.



## **APPENDIX F**

### **RSK GENERIC ASSESSMENT CRITERIA**

## Generic assessment criteria for human health: residential scenario with home-grown produce

### Background

RSK's generic assessment criteria (GAC) were initially prepared following the publication by the Environment Agency (EA) of soil guideline value (SGV) and toxicological (TOX) reports, and associated publications in 2009<sup>(1)</sup>. RSK GAC were updated following the publication of GAC by LQM/CIEH in 2009<sup>(2)</sup>. RSK GAC are periodically revised when updated information on toxicological, land use or receptor parameters is published.

### Updates to the RSK GAC

In 2014, the publication of Category 4 Screening Levels (C4SL)<sup>(3,4)</sup>, as part of the Defra-funded research project SP1010, included modifications to certain exposure assumptions documented within EA Science Report SC050221/SR3 (herein after referred to as SR3)<sup>(5)</sup> used in the generation of SGVs.

C4SL were published for six substances (cadmium, arsenic, benzene, benzo(a)pyrene, chromium VI and lead) for a sandy loam soil type with 6% soil organic matter, based on a low level of toxicological concern (LLTC; see Section 2.3 of research project report SP1010<sup>(3)</sup>). Where a C4SL has been published, the RSK GAC duplicates the C4SL published values using all input parameters within the SP1010 final project report<sup>(3)</sup> and associated appendices<sup>(6)</sup>, and adopts them as GAC for these six substances.

For all other substances the C4SL exposure modifications, with the exception of the "top two" produce type approach taken in the C4SL, have been applied to the current RSK GAC. These include alterations to daily inhalation rates for residential and commercial scenarios, reducing soil adherence factors in children (age classes 1 to 12 only) for residential land use, reducing exposure frequency for dermal contact outdoors for residential land use, and updated produce type consumption rates (90<sup>th</sup> percentile) based on recent data from the National Diet and Nutrition Survey.

The RSK GAC have also been revised with updated toxicology published by LQM/CIEH in 2015<sup>(7)</sup> or by the USEPA<sup>(14)</sup>, where a C4SL has not been published.

### RSK GAC derivation for metals and organic compounds

#### *Model selection*

Soil assessment criteria (SAC) were calculated using the Contaminated Land Exposure Assessment (CLEA) tool v1.071, supporting EA guidance<sup>(5,8,9)</sup> and revised exposure scenarios published for the C4SL<sup>(3)</sup>. Groundwater assessment criteria (GrAC) protective of human health via the inhalation pathway were derived using the RBCA 2.51 model with the Johnson and Ettinger model for soil and groundwater volatilisation. RSK has updated the inputs within RBCA to reflect EA guidance<sup>(1,5,8,9)</sup>. The SAC and GrAC collectively are termed GAC.

#### *Conceptual model*

In accordance with SR3<sup>(5)</sup>, the residential with home-grown produce scenario considers risks to a female child between the ages of 0 and 6 years old as the highest risk scenario. In accordance

with Box 3.1 of SR3<sup>(5)</sup>, the pathways considered for production of the SAC in the residential with home-grown produce scenario are

- direct soil and dust ingestion
- consumption of home-grown produce
- consumption of soil attached to home-grown produce
- dermal contact with soil and indoor dust
- inhalation of indoor and outdoor dust and vapours.

Figure 1 is a conceptual model illustrating these linkages.

In line with guidance in the EA SGV report for cadmium<sup>(1)</sup>, the RSK GAC for cadmium has been derived based on estimates representative of lifetime exposure. Although young children are generally more likely to have higher exposures to soil contaminants, the renal toxicity of cadmium, and the derivation of the  $TDI_{oral}$  and  $TDI_{inh}$ , are based on considerations of the kidney burden accumulated over 50 years or so. It is therefore reasonable to consider exposure not just in childhood but averaged over a longer period.

The pathway considered in production of the GrAC is the volatilisation of compounds from groundwater and subsequent vapour inhalation by residents while indoors. Figure 2 illustrates this linkage. Although the outdoor air inhalation pathway is also valid, this contributes little to the overall risks owing to the dilution in outdoor air. Within RBCA, the solubility limit of the chemical restricts the extent of volatilisation, which in turn drives the indoor air inhalation pathway. While the same restriction is not built into the CLEA model, the CLEA model output cells are flagged red where the soil saturation limit has been exceeded.

With respect to volatilisation, the CLEA model assumes a simple linear partitioning of a chemical in the soil between the sorbed, dissolved and vapour phase<sup>(9)</sup>. The upper boundaries of this partitioning are represented by the maximum aqueous solubility and pure saturated vapour concentration of the chemical. The CLEA model estimates saturated soil concentrations where these limits are reached<sup>(9)</sup>. The CLEA software uses a traffic light system to identify when individual and/or combined assessment criteria exceed the lower of either the aqueous- or vapour-based soil saturation limits. Model output cells are flagged red where the saturated soil concentration has been exceeded and the contribution of the indoor and outdoor vapour pathway to total exposure is greater than 10%. In this case, further consideration of the following is required<sup>(9)</sup>:

- Free phase contamination may be present.
- Exposure from the vapour pathways will be over-predicted by the model, as in reality the vapour phase concentration will not increase at concentrations above saturation limits
- Where the vapour pathway contribution is greater than 90%, it is unlikely the relevant health criteria value (HCV) will be exceeded at soil concentrations at least a factor of ten higher than the relevant HCV.

Where the vapour pathway is the predominant pathway (contributes greater than 90% of exposure) or the only exposure route considered and the cell is highlighted red (SAC exceeds saturation limit), the risk based on the assumed conceptual model is likely to be negligible as the vapour risk is assumed to be tolerable at maximum possible soil concentrations. In such circumstances, the vapour pathway exposure should be considered based on the presence of free phase or non-aqueous phase liquid sources and the measured concentrations of volatile organic compounds (VOC) in the vapour phase. Screening could be considered based on setting

the SAC as the modelled soil saturation limits. However, as stated within the CLEA handbook<sup>(9)</sup>, this is likely to not be practical in many cases because of the very low saturation limits and, in any case, is highly conservative.

It should also be noted that for mixtures of compounds, free phase may be present where soil (or groundwater) concentrations are well below saturation limits for individual compounds.

Where the vapour pathway is only one of the exposure pathways considered, an additional approach can then be utilised as detailed within Section 4.12 of the CLEA model handbook<sup>(9)</sup>, which explains how to calculate an effective assessment criterion manually.

SR3<sup>(5)</sup> states that, as a general rule of thumb, it is recognised that estimating vapour phase concentrations from dissolved and sorbed phase contamination by petroleum hydrocarbons are at least a factor of ten higher than those likely to be measured on-site. RSK has therefore applied an empirical subsurface to indoor air correction factor of 10 into the CLEA model chemical database and to outputs from the RBCA model for all petroleum hydrocarbon fractions (including BTEX, trimethylbenzenes and the polycyclic aromatic hydrocarbons (PAH) naphthalene, acenaphthene and acenaphthylene) to reduce this conservatism.

### *Input selection*

The most up-to-date published chemical and toxicological data was obtained from EA Report SC050021/SR7<sup>(10)</sup>, the EA TOX<sup>(11)</sup> reports, the C4SL SP1010 project report and associated appendices<sup>(3,6)</sup>, the 2015 LQM/CIEH report<sup>(7)</sup> or the USEPA IRIS database<sup>(14)</sup>. Where a C4SL has been published, the RSK GAC have duplicated the C4SL published values using all input parameters within the SP1010 final project report<sup>(3)</sup> and associated appendices<sup>(6)</sup>, and has adopted them as GAC for these six substances. Toxicological and specific chemical parameters for aromatic hydrocarbon C<sub>8</sub>–C<sub>9</sub> (styrene), 1,2,4-trimethylbenzene and methyl tertiary-butyl ether (MTBE) were obtained from the CL:AIRE Soil Generic Assessment Criteria report<sup>(11)</sup>.

For TPH, aromatic hydrocarbons C<sub>5</sub>–C<sub>8</sub> were not modelled, as this range comprises benzene and toluene, which are modelled separately. The aromatic C<sub>8</sub>–C<sub>9</sub> hydrocarbon fraction comprises ethylbenzene, xylene and styrene. As ethylbenzene and xylene are being modelled separately, the physical, chemical and toxicological data for aromatic C<sub>8</sub>–C<sub>9</sub> have been taken from styrene.

For the GrAC, the HCV used in the modelling were derived using the toxicological data for the SAC amended as follows:

- A child weighing 13.3kg (average of 0-6 year old female in accordance with Table 4.6 of SR3<sup>(5)</sup>) and breathing 8.77m<sup>3</sup> (average daily inhalation rate for a 0-6yr old female in accordance with SP1010 final project report for the C4SL (Table 3.2<sup>(3)</sup>) and USEPA data<sup>(14)</sup>)
- Background inhalation (mean daily intake (MDI)) for a child (Age Classes 1-6)
- Residential amendments to the MDI for younger age groups following Table 3.4 and Section 3.4.1 of SR2<sup>(8)</sup>; amended to reflect average daily inhalation rates in accordance with SP1010 final project report for the C4SL (Table 3.2<sup>(3)</sup>) and USEPA data<sup>(12)</sup>.

### *Physical parameters*

For the residential with home-grown produce scenario, the CLEA default building is a small, two-storey terrace house with a concrete ground-bearing slab. The house is assumed to have a 100m<sup>2</sup> private garden consisting of lawn and flowerbeds, incorporating a 20m<sup>2</sup> plot for growing fruit and vegetables consumed by the residents. SR3<sup>(5)</sup> notes this residential building type to be

the most conservative in terms of potential for vapour intrusion. The building parameters used in the production of the RSK GACs are the default CLEA v1.06 inputs presented in Table 3.3 of SR3<sup>(3)</sup>, with a dust loading factor detailed in Section 9.3 of SR3<sup>(5)</sup>. The parameters for a sandy loam soil type were used in line with Table 4.4 of SR3<sup>(5)</sup>. This includes a value of 6% for the percentage of soil organic matter (SOM) within the soil. In RSK's experience, this is rather high for many sites. To avoid undertaking site-specific risk assessments for SOM, RSK has produced an additional set of GAC for SOM of 1% and 2.5% for all substances using the CLEA tool.

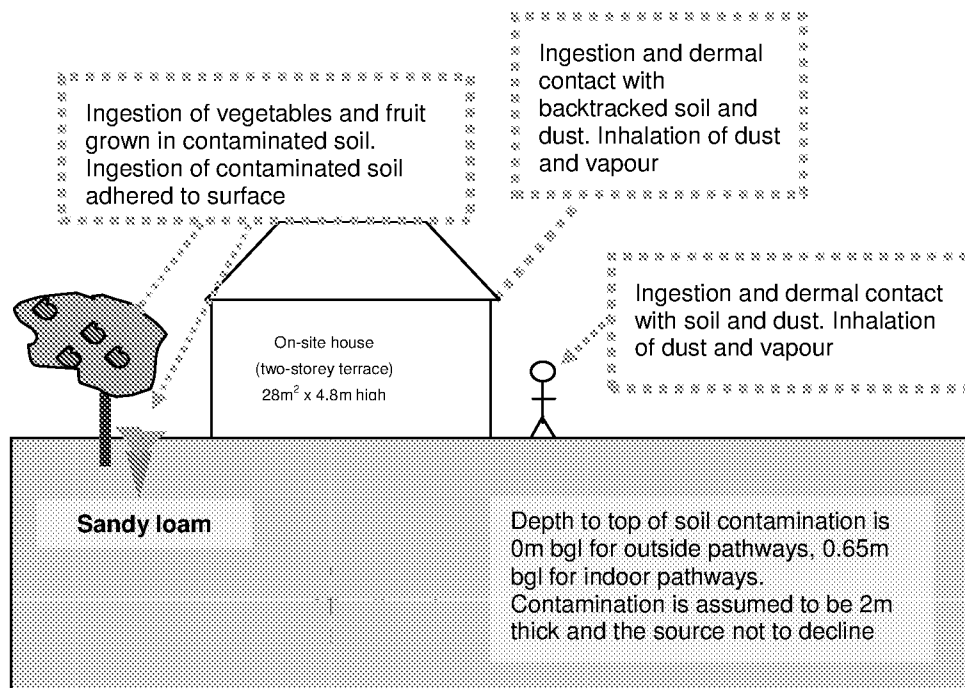
For the GrAC, the depth to groundwater was taken as 2.5m based on RSK's experience of assessing the volatilisation pathway from groundwater. The GrAC were produced using the input parameters in Table 4.

*Summary of modifications to the default CLEA SR3<sup>(5)</sup> input parameters for residential with home-grown produce land-use scenario*

In summary, the RSK GAC were produced using the default input parameters for soil properties, the air dispersion model, building properties and the vapour model detailed in SR3<sup>(5)</sup>. Modifications to the default SR3<sup>(5)</sup> exposure scenarios based on the C4SL exposure scenarios<sup>(3)</sup> are presented in Tables 2 and 3 below.

The final selected GAC are presented by pathway in Table 5 and the combined GAC in Table 6.

**Figure 1: Conceptual model for residential scenario with home-grown produce**



**Table 1: Exposure assessment parameters for residential scenario with home-grown produce – inputs for CLEA model**

| Parameter            | Value                              | Justification                                                                                                                                                                                                                   |
|----------------------|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Land use             | Residential with homegrown produce | Chosen land use                                                                                                                                                                                                                 |
| Receptor             | Female child age 1 to 6            | Key generic assumption given in Box 3.1, SR3 <sup>(5)</sup>                                                                                                                                                                     |
| Building             | Small terraced house               | Key generic assumption given in Box 3.1, SR3. Small, two-storey terraced house chosen, as it is the most conservative residential building type in terms of protection from vapor intrusion (Section 3.4.6, SR3) <sup>(5)</sup> |
| Soil type            | Sandy Loam                         | Most common UK soil type (Section 4.3.1, from Table 3.1, SR3) <sup>(5)</sup>                                                                                                                                                    |
| Start AC (age class) | 1                                  | Range of age classes corresponding to key generic assumption that the critical receptor is a young female child aged 0–6. From Box 3.1, SR3 <sup>(5)</sup>                                                                      |
| End AC (age class)   | 6                                  |                                                                                                                                                                                                                                 |
| SOM (%)              | 6                                  | Representative of sandy loamy soil according to EA guidance note dated January 2009 entitled 'Changes We Have Made to the CLEA Framework Documents' <sup>(13)</sup>                                                             |
|                      | 1                                  | To provide SAC for sites where SOM <6% as often observed by RSK                                                                                                                                                                 |
|                      | 2.5                                |                                                                                                                                                                                                                                 |
| pH                   | 7                                  | Model default                                                                                                                                                                                                                   |

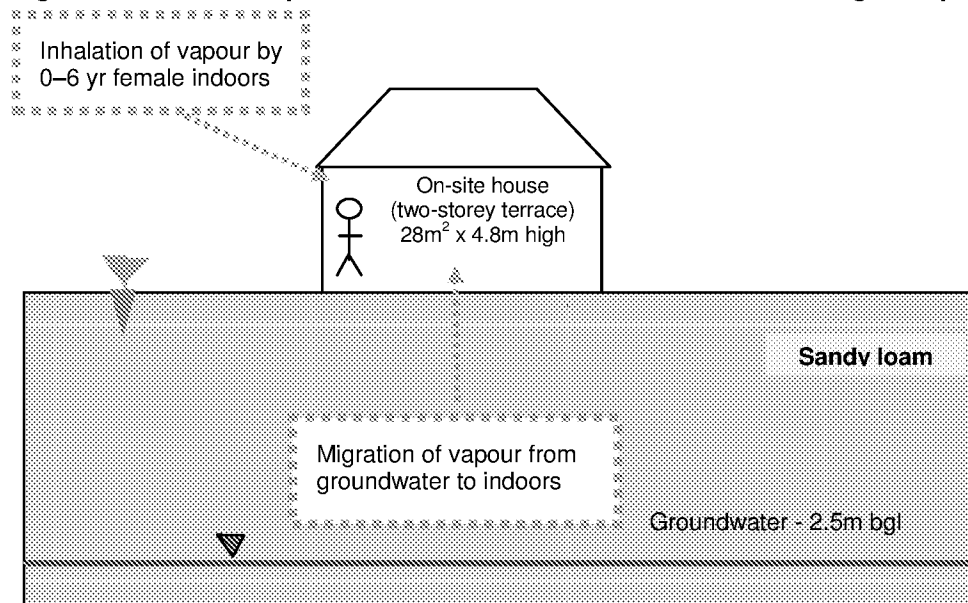
**Table 2: Residential with home-grown produce – modified home-grown produce data**

| Name             | Consumption rate 90 <sup>th</sup> percentile (g FW kg <sup>-1</sup> BW day <sup>-1</sup> ) by age class |      |      |      |      |      | Dry weight conversion factor (g DW g <sup>-1</sup> FW) | Home-grown fraction (average)  | Home-grown fraction (high end) | Soil loading factor (g g <sup>-1</sup> DW) | Preparation correction factor |
|------------------|---------------------------------------------------------------------------------------------------------|------|------|------|------|------|--------------------------------------------------------|--------------------------------|--------------------------------|--------------------------------------------|-------------------------------|
|                  | 1                                                                                                       | 2    | 3    | 4    | 5    | 6    |                                                        |                                |                                |                                            |                               |
| Green vegetables | 7.12                                                                                                    | 5.87 | 5.87 | 5.87 | 4.53 | 4.53 | 0.096                                                  | 0.05                           | 0.33                           | 1.00E-03                                   | 2.00E-01                      |
| Root vegetables  | 10.7                                                                                                    | 2.83 | 2.83 | 2.83 | 2.14 | 2.14 | 0.103                                                  | 0.06                           | 0.4                            | 1.00E-03                                   | 1.00E+00                      |
| Tuber vegetables | 16                                                                                                      | 6.6  | 6.6  | 6.6  | 4.95 | 4.95 | 0.21                                                   | 0.02                           | 0.13                           | 1.00E-03                                   | 1.00E+00                      |
| Herbaceous fruit | 1.83                                                                                                    | 3.39 | 3.39 | 3.39 | 2.24 | 2.24 | 0.058                                                  | 0.06                           | 0.4                            | 1.00E-03                                   | 6.00E-01                      |
| Shrub fruit      | 2.23                                                                                                    | 0.46 | 0.46 | 0.46 | 0.19 | 0.19 | 0.166                                                  | 0.09                           | 0.6                            | 1.00E-03                                   | 6.00E-01                      |
| Tree fruit       | 3.82                                                                                                    | 10.3 | 10.3 | 10.3 | 5.16 | 5.16 | 0.157                                                  | 0.04                           | 0.27                           | 1.00E-03                                   | 6.00E-01                      |
| Justification    | Table 3.4, SP1010 <sup>(3)</sup>                                                                        |      |      |      |      |      | Table 6.3, SR3 <sup>(5)</sup>                          | Table 4.19, SR3 <sup>(5)</sup> |                                | Table 6.3, SR3 <sup>(5)</sup>              |                               |

**Table 3: Residential with home-grown produce – modified and use and receptor data**

| Parameter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Unit                                  | Age class                                                                 |     |       |      |      |      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------|-----|-------|------|------|------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                       | 1                                                                         | 2   | 3     | 4    | 5    | 6    |
| EF (soil and dust ingestion)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | day yr <sup>-1</sup>                  | 180                                                                       | 365 | 365   | 365  | 365  | 365  |
| EF (consumption of home-grown produce)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | day yr <sup>-1</sup>                  | 180                                                                       | 365 | 365   | 365  | 365  | 365  |
| EF (skin contact, indoor)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | day yr <sup>-1</sup>                  | 180                                                                       | 365 | 365   | 365  | 365  | 365  |
| EF (skin contact, outdoor)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | day yr <sup>-1</sup>                  | 170                                                                       | 170 | 170   | 170  | 170  | 170  |
| EF (inhalation of dust and vapour, indoor)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | day yr <sup>-1</sup>                  | 365                                                                       | 365 | 365   | 365  | 365  | 365  |
| EF (inhalation of dust and vapour, outdoor)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | day yr <sup>-1</sup>                  | 365                                                                       | 365 | 365   | 365  | 365  | 365  |
| Justification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                       | Table 3.5, SP1010 <sup>(3)</sup> ; Table 3.1, SR3 <sup>(5)</sup>          |     |       |      |      |      |
| Soil to skin adherence factor (outdoor)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | mg cm <sup>-2</sup> day <sup>-1</sup> | 0.1                                                                       | 0.1 | 0.1   | 0.1  | 0.1  | 0.1  |
| Justification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                       | Table 3.5, SP1010 <sup>(3)</sup>                                          |     |       |      |      |      |
| Inhalation rate                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | m <sup>3</sup> day <sup>-1</sup>      | 5.4                                                                       | 8.0 | 8.9/f | 10.1 | 10.1 | 10.1 |
| Justification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                       | Mean value USEPA, 2011 <sup>(12)</sup> ; Table 3.2, SP1010 <sup>(3)</sup> |     |       |      |      |      |
| Notes: For <b>cadmium</b> , the exposure assessment for a residential land use is based on estimates representative of lifetime exposure AC1-18. This is because the TDI <sub>oral</sub> and TDI <sub>inh</sub> are based on considerations of the kidney burden accumulated over 50 years. It is therefore reasonable to consider exposure not just in childhood but averaged over a longer period. See the Environment Agency Science Report SC05002/ TOX 3 <sup>(1)</sup> , Science Report SC050021/Cadmium SGV <sup>(1)</sup> and the project report SP1010 <sup>(3)</sup> for more information. |                                       |                                                                           |     |       |      |      |      |

**Figure 2: GrAC conceptual model for RBCA residential with home-grown produce scenario**



**Table 4: Residential with home-grown produce – RBCA inputs**

| Parameter                            | Unit                             | Value    | Justification                                                                                                                                                   |
|--------------------------------------|----------------------------------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Receptor</b>                      |                                  |          |                                                                                                                                                                 |
| Averaging time                       | Years                            | 6        | From Box 3.1, SR3 <sup>(5)</sup>                                                                                                                                |
| Receptor weight                      | kg                               | 13.3     | Average of CLEA 0–6 year old female data, Table 4.6, SR3 <sup>(5)</sup>                                                                                         |
| Exposure duration                    | Years                            | 6        | From Box 3.1, report, SR3 <sup>(5)</sup>                                                                                                                        |
| Exposure frequency                   | Days/yr                          | 350      | Weighted using occupancy period of 23 hours per day for 365 days of the year                                                                                    |
| <b>Soil type – sandy loam</b>        |                                  |          |                                                                                                                                                                 |
| Total porosity                       | -                                | 0.53     | CLEA value for sandy loam. Parameters for sandy loam from Table 4.4, SR3 <sup>(5)</sup>                                                                         |
| Volumetric water content             | -                                | 0.33     |                                                                                                                                                                 |
| Volumetric air content               | -                                | 0.20     |                                                                                                                                                                 |
| Dry bulk density                     | g cm <sup>-3</sup><br>or<br>kg/L | 1.21     |                                                                                                                                                                 |
| Vertical hydraulic conductivity      | cm s <sup>-1</sup>               | 3.56E-3  | CLEA value for saturated conductivity of sandy loam, Table 4.4, SR3 <sup>(5)</sup> equivalent to 307 cm/day                                                     |
| Vapour permeability                  | m <sup>2</sup>                   | 3.05E-12 | Calculated for sandy loam using equations in Appendix 1, SR3 <sup>(5)</sup>                                                                                     |
| Capillary zone thickness             | m                                | 0.1      | Professional judgement                                                                                                                                          |
| Fraction organic carbon              | %                                | 0.0348   | Representative of sandy loam according to EA guidance note dated January 2009 entitled 'Changes We Have Made to the CLEA Framework Documents' <sup>(13)</sup>   |
| <b>Building</b>                      |                                  |          |                                                                                                                                                                 |
| Building volume/area ratio           | m                                | 4.8      | Table 3.3, SR3 <sup>(5)</sup>                                                                                                                                   |
| Foundation area                      | m <sup>2</sup>                   | 28       |                                                                                                                                                                 |
| Foundation perimeter                 | m                                | 22       | Calculated assuming building measures 7m x 4m to give 28m <sup>2</sup> foundation area                                                                          |
| Building air exchange rate           | d <sup>-1</sup>                  | 12       | Table 3.3, SR3 <sup>(5)</sup> Building air exchange rate equivalent to 1.4E-04 s <sup>-1</sup>                                                                  |
| Depth to bottom of foundation slab   | m                                | 0.15     |                                                                                                                                                                 |
| Foundation thickness                 | m                                | 0.15     |                                                                                                                                                                 |
| Foundation crack fraction            | -                                | 0.0151   | Calculated from floor crack area of 423 cm <sup>2</sup> and building footprint of 28m <sup>2</sup> in Table 4.21, SR3 <sup>(5)</sup>                            |
| Volumetric water content of cracks   | -                                | 0.33     | Assumed equal to underlying soil type in assumption that cracks become filled with soil over time. Parameters for sandy loam from Table 4.4, SR3 <sup>(5)</sup> |
| Volumetric air content of cracks     | -                                | 0.2      |                                                                                                                                                                 |
| Indoor/outdoor differential pressure | Pa                               | 3.1      | From Table 3.3, SR3 <sup>(5)</sup> Equivalent to 31 g/cm/s <sup>2</sup>                                                                                         |

## References

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## GENERIC ASSESSMENT CRITERIA FOR HUMAN HEALTH - RESIDENTIAL WITH HOME-GROWN PRODUCE



Table 5

Human Health Generic Assessment Criteria by Pathway for Residential With Home-Grown Produce Scenario

| Compound                              | Notes | GrAC<br>(µg/l) | SAC Appropriate to Pathway SOM 1% (mg/kg) |            |          | Soil Saturation<br>Limit (mg/kg) | SAC Appropriate to Pathway SOM 2.5% (mg/kg) |            |          | Soil Saturation<br>Limit (mg/kg) | SAC Appropriate to Pathway SOM 6% (mg/kg) |            |          | Soil Saturation<br>Limit (mg/kg) |
|---------------------------------------|-------|----------------|-------------------------------------------|------------|----------|----------------------------------|---------------------------------------------|------------|----------|----------------------------------|-------------------------------------------|------------|----------|----------------------------------|
|                                       |       |                | Oral                                      | Inhalation | Combined |                                  | Oral                                        | Inhalation | Combined |                                  | Oral                                      | Inhalation | Combined |                                  |
| Metals                                |       |                |                                           |            |          |                                  |                                             |            |          |                                  |                                           |            |          |                                  |
| Arsenic                               | (a,b) | -              | 3.71E-01                                  | 5.26E-02   | NR       | NR                               | 3.71E-01                                    | 5.26E-02   | NR       | NR                               | 3.71E-01                                  | 5.26E-02   | NR       | NR                               |
| Cadmium                               | (a)   | -              | 2.30E-01                                  | 4.89E-02   | 2.21E-01 | NR                               | 2.30E-01                                    | 4.89E-02   | 2.21E-01 | NR                               | 2.30E-01                                  | 4.89E-02   | 2.21E-01 | NR                               |
| Chromium (III) - trivalent            | (c)   | -              | 1.84E-04                                  | 9.07E-02   | NR       | NR                               | 1.84E-04                                    | 9.07E-02   | NR       | NR                               | 1.84E-04                                  | 9.07E-02   | NR       | NR                               |
| Chromium (VI) - hexavalent            | (a,d) | -              | 5.85E-01                                  | 2.09E-01   | NR       | NR                               | 5.85E-01                                    | 2.09E-01   | NR       | NR                               | 5.85E-01                                  | 2.09E-01   | NR       | NR                               |
| Copper                                | -     | -              | 2.72E-03                                  | 1.41E-04   | 2.47E-03 | NR                               | 2.72E-03                                    | 1.41E-04   | 2.47E-03 | NR                               | 2.72E-03                                  | 1.41E-04   | 2.47E-03 | NR                               |
| Lead                                  | (a)   | -              | 2.01E-02                                  | NR         | NR       | NR                               | 2.01E-02                                    | NR         | NR       | NR                               | 2.01E-02                                  | NR         | NR       | NR                               |
| Elemental Mercury (Hg <sup>0</sup> )  | (d)   | 1.29E+01       | NR                                        | 3.86E-01   | NR       | 4.31E+00                         | NR                                          | 5.60E-01   | NR       | 1.07E+01                         | NR                                        | 1.29E+00   | NR       | 2.58E+01                         |
| Inorganic Mercury (Hg <sup>2+</sup> ) | -     | -              | 3.99E-01                                  | 5.53E-03   | 3.91E-01 | NR                               | 3.99E-01                                    | 5.53E-03   | 3.91E-01 | NR                               | 3.99E-01                                  | 5.53E-03   | 3.91E-01 | NR                               |
| Methyl Mercury (Hg <sup>+</sup> )     | -     | 2.22E-04       | 1.26E-01                                  | 1.87E-01   | 7.92E-00 | 7.33E+01                         | 1.26E-01                                    | 5.62E-01   | 9.34E-00 | 1.42E+02                         | 1.26E-01                                  | 7.86E-01   | 1.06E-01 | 3.04E+02                         |
| Nickel                                | (d)   | -              | 1.27E-02                                  | 1.81E-02   | NR       | NR                               | 1.27E-02                                    | 1.81E-02   | NR       | NR                               | 1.27E-02                                  | 1.81E-02   | NR       | NR                               |
| Selenium                              | (b)   | -              | 2.96E-02                                  | NR         | NR       | NR                               | 2.96E-02                                    | NR         | NR       | NR                               | 2.96E-02                                  | NR         | NR       | NR                               |
| Zinc                                  | (b)   | -              | 3.86E-03                                  | 5.63E-07   | NR       | NR                               | 3.86E-03                                    | 5.63E-07   | NR       | NR                               | 3.86E-03                                  | 5.63E-07   | NR       | NR                               |
| Cyanide (free)                        | -     | -              | 1.37E-00                                  | 1.87E-04   | 1.37E-00 | NR                               | 1.37E-00                                    | 1.87E-04   | 1.37E-00 | NR                               | 1.37E-00                                  | 1.87E-04   | 1.37E-00 | NR                               |
| Volatile Organic Compounds            |       |                |                                           |            |          |                                  |                                             |            |          |                                  |                                           |            |          |                                  |
| Benzene                               | (a)   | 2.50E+04       | 2.62E-01                                  | 9.04E-01   | 2.89E-01 | 1.22E+03                         | 5.98E-01                                    | 1.68E+00   | 4.98E+01 | 2.26E+03                         | 1.16E+00                                  | 3.49E+00   | 2.73E-01 | 4.71E+03                         |
| Toluene                               | -     | 5.90E+05       | 1.33E-02                                  | 9.06E-02   | 1.31E-02 | 8.89E-02                         | 5.43E-03                                    | 2.00E-03   | 2.37E-02 | 1.92E+03                         | 7.36E-02                                  | 4.55E-03   | 6.77E-02 | 4.36E+03                         |
| Ethylbenzene                          | -     | 1.25E+05       | 1.10E-02                                  | 8.54E-01   | 4.74E-01 | 5.18E-02                         | 2.61E-02                                    | 1.96E-02   | 1.18E-02 | 1.22E+03                         | 6.00E-02                                  | 4.59E-02   | 2.80E-02 | 2.84E+03                         |
| Xylene - m                            | -     | 1.16E+05       | 2.10E-02                                  | 6.25E-01   | 5.82E-01 | 6.25E+02                         | 5.01E-02                                    | 1.25E-02   | 1.45E-02 | 1.47E+03                         | 1.19E+00                                  | 4.59E-02   | 3.27E-02 | 3.46E+03                         |
| Xylene - o                            | -     | 1.41E+05       | 1.32E-02                                  | 5.67E-01   | 6.07E-01 | 4.78E-02                         | 4.95E-02                                    | 2.96E-02   | 1.43E-02 | 1.12E+03                         | 1.05E-03                                  | 4.86E-02   | 2.58E-02 | 2.62E+03                         |
| Xylene - p                            | -     | 1.21E+05       | 1.56E-02                                  | 7.83E-01   | 5.86E-01 | 5.76E-02                         | 4.70E-02                                    | 1.89E-02   | 1.33E-02 | 1.35E+03                         | 1.08E-03                                  | 4.39E-02   | 2.10E-02 | 3.17E+03                         |
| Total xylene                          | -     | 1.16E+05       | 1.88E-02                                  | 7.83E-01   | 5.86E-01 | 6.25E+02                         | 4.58E-02                                    | 1.69E-02   | 1.43E-02 | 1.47E+03                         | 1.05E+00                                  | 4.39E-02   | 2.10E-02 | 3.46E+03                         |
| Methyl tertiary Butyl ether (MTBE)    | -     | 9.32E+08       | 1.54E-02                                  | 1.04E-03   | 1.24E-02 | 2.04E+04                         | 2.87E-02                                    | 1.89E-03   | 2.38E-02 | 3.31E+04                         | 6.03E-02                                  | 3.21E-03   | 3.69E-02 | 6.27E+04                         |
| Trichloroethene                       | -     | 6.44E+01       | 2.83E-01                                  | 1.72E-02   | 1.82E-02 | 1.54E+03                         | 6.29E-01                                    | 3.53E-02   | 3.40E-02 | 3.22E+03                         | 1.41E+00                                  | 7.88E-02   | 7.53E-02 | 7.14E+03                         |
| Tetrachloroethene                     | -     | 4.08E+02       | 4.49E-00                                  | 1.79E-01   | 1.75E-01 | 4.24E+02                         | 1.04E-01                                    | 4.63E-01   | 3.34E-01 | 9.51E+02                         | 2.28E-01                                  | 3.21E-01   | 3.94E-01 | 2.18E+03                         |
| 1,1,1-Trichloroethene                 | -     | 3.59E+04       | 3.29E-03                                  | 9.03E-00   | 8.77E-00 | 1.43E+03                         | 7.28E-02                                    | 1.84E-01   | 1.80E-01 | 2.92E+03                         | 1.38E-03                                  | 4.04E-01   | 3.34E-01 | 6.39E+03                         |
| 1,1,1,2-Tetrachloroethane             | -     | 2.84E+03       | 3.89E-00                                  | 1.54E-00   | 1.20E-00 | 2.60E+03                         | 1.27E-01                                    | 2.59E-00   | 2.75E-00 | 6.02E+03                         | 3.32E-01                                  | 5.29E-00   | 6.40E-00 | 1.40E+04                         |
| 1,1,2,2-Tetrachloroethane             | -     | 1.85E+04       | 2.81E-00                                  | 3.82E-00   | 1.94E-00 | 2.87E+03                         | 5.10E-00                                    | 2.94E-00   | 3.47E-00 | 5.46E+03                         | 1.36E-01                                  | 1.76E-01   | 1.57E-00 | 1.20E+04                         |
| Carbon Tetrachloride                  | -     | 6.10E+01       | 3.19E-00                                  | 2.59E-00   | 2.57E-02 | 1.52E+03                         | 7.11E-00                                    | 2.69E-02   | 5.82E-02 | 3.32E+03                         | 1.62E-01                                  | 1.22E-01   | 1.27E-01 | 7.54E+03                         |
| 1,2-Dichloroethane                    | -     | 9.70E+01       | 3.17E-02                                  | 6.20E-03   | 7.13E-03 | 3.41E+03                         | 5.73E-02                                    | 1.83E-02   | 1.06E-02 | 4.91E+03                         | 1.08E-01                                  | 2.28E-02   | 1.68E-02 | 8.43E+03                         |
| Vinyl Chloride                        | -     | 6.20E+00       | 3.82E-05                                  | 7.73E-04   | 6.48E-04 | 1.36E+03                         | 3.83E-03                                    | 1.88E-03   | 6.79E-04 | 1.76E+03                         | 1.25E-02                                  | 1.35E-03   | 1.36E-03 | 2.69E+03                         |
| 1,2,4-Trimethylbenzene                | -     | 5.10E+03       | NR                                        | 1.78E+00   | NR       | 4.74E+02                         | NR                                          | 4.28E+00   | NR       | 1.16E+03                         | NR                                        | 3.72E+00   | NR       | 2.76E+03                         |
| 1,3,5-Trimethylbenzene                | (e)   | -              | NR                                        | NR         | NR       | 2.30E+02                         | NR                                          | NR         | NR       | 5.52E+02                         | NR                                        | NR         | NR       | 1.30E+03                         |
| Semi-Volatile Organic Compounds       |       |                |                                           |            |          |                                  |                                             |            |          |                                  |                                           |            |          |                                  |
| Acenaphthene                          | -     | 4.11E+03       | 2.27E-02                                  | 4.86E-04   | 2.86E-02 | 5.70E+01                         | 5.41E-02                                    | 1.18E-05   | 5.38E-02 | 1.41E+02                         | 1.18E-03                                  | 2.86E-05   | 1.17E-03 | 3.36E+02                         |
| Acenaphthylene                        | -     | 7.95E+03       | 1.95E-02                                  | 4.59E-04   | 1.84E-02 | 8.61E+01                         | 4.48E-02                                    | 1.11E-05   | 4.40E-02 | 2.12E+02                         | 9.78E-02                                  | 2.53E-05   | 9.74E-02 | 5.06E+02                         |
| Anthracene                            | -     | -              | 2.43E-03                                  | 1.59E-05   | 2.39E-03 | 1.17E+00                         | 5.59E-03                                    | 3.77E-05   | 5.45E-03 | 2.91E+00                         | 1.10E-04                                  | 8.78E-05   | 1.09E-04 | 6.96E+00                         |
| Benzo(a)anthracene                    | -     | -              | 1.01E-01                                  | 2.47E-01   | 7.18E+00 | 1.71E+00                         | 1.42E-01                                    | 4.27E+01   | 1.07E-01 | 4.28E+00                         | 1.69E-01                                  | 5.26E-01   | 1.33E-01 | 1.03E+01                         |
| Benzo(b)fluoranthene                  | -     | -              | 2.96E+00                                  | 1.93E-01   | 2.56E+00 | 1.22E+00                         | 5.89E+00                                    | 2.13E-01   | 3.29E+00 | 3.04E+00                         | 4.43E+00                                  | 2.22E+01   | 3.89E+00 | 7.29E+00                         |
| Benzo(g,h,i)perylene                  | -     | -              | 3.77E-02                                  | 1.87E-02   | 3.14E-02 | 1.54E-02                         | 4.09E-02                                    | 1.94E-03   | 3.86E-02 | 3.85E-02                         | 4.23E-02                                  | 1.97E-03   | 3.48E-02 | 9.23E-02                         |
| Benzo(k)fluoranthene                  | -     | -              | 8.92E-01                                  | 5.41E-02   | 7.86E-01 | 6.87E-01                         | 1.10E-02                                    | 5.79E+02   | 9.22E-01 | 1.72E+00                         | 1.21E+02                                  | 5.91E-02   | 1.00E+02 | 4.12E+00                         |
| Chrysene                              | -     | -              | 1.86E-01                                  | 1.19E-02   | 1.46E-01 | 4.40E-01                         | 2.54E-01                                    | 1.49E-02   | 2.17E-01 | 1.10E+00                         | 3.12E-01                                  | 1.66E-02   | 2.67E-01 | 2.64E+00                         |
| Dibenz(a,h)anthracene                 | -     | -              | 2.90E-01                                  | 1.45E-00   | 2.41E-01 | 3.93E-03                         | 3.43E-01                                    | 1.64E+00   | 2.64E-01 | 9.82E-03                         | 3.89E-01                                  | 1.74E+00   | 3.04E-01 | 2.36E-02                         |
| Fluoranthene                          | -     | -              | 2.67E-02                                  | 3.83E-04   | 2.25E+02 | 1.89E+01                         | 5.83E-02                                    | 8.87E+04   | 5.80E-02 | 4.73E+01                         | 9.00E-02                                  | 1.83E+05   | 8.96E-02 | 1.13E+02                         |
| Fluorene                              | -     | -              | 1.77E-02                                  | 6.20E-03   | 1.72E-02 | 3.09E+01                         | 4.18E-02                                    | 1.53E-04   | 4.07E-02 | 7.65E+01                         | 6.88E-02                                  | 3.82E-04   | 8.77E-02 | 1.83E+02                         |
| Indeno(1,2,3-cd)pyrene                | -     | -              | 3.09E-01                                  | 2.12E-02   | 2.70E-01 | 6.13E-02                         | 4.22E-01                                    | 2.38E-02   | 3.59E-01 | 1.53E+01                         | 4.93E-01                                  | 2.50E-02   | 4.11E-01 | 3.68E-01                         |
| Phenanthrene                          | -     | -              | 9.85E-01                                  | 7.17E-03   | 9.72E-01 | 3.60E+01                         | 2.24E-02                                    | 1.76E-04   | 2.22E-02 | 8.96E+01                         | 4.48E+02                                  | 4.07E-04   | 4.43E+02 | 2.14E+02                         |
| Pyrene                                | -     | -              | 6.25E+02                                  | 6.79E-04   | 6.80E-02 | 2.20E+00                         | 1.25E-03                                    | 2.04E-05   | 1.24E-03 | 5.49E+00                         | 2.05E-03                                  | 4.23E-05   | 2.04E+03 | 1.32E+01                         |
| Benzo(a)pyrene                        | (a)   | -              | 4.96E-00                                  | 3.91E-01   | NR       | 9.11E-01                         | 4.96E-00                                    | 3.77E-01   | NR       | 2.28E+00                         | 4.96E-00                                  | 3.89E-01   | NR       | 5.46E+00                         |
| Naphthalene                           | -     | 1.90E+04       | 3.79E-01                                  | 2.39E-01   | 1.27E-01 | 7.64E+01                         | 5.68E-01                                    | 2.68E-01   | 3.04E-01 | 1.83E+02                         | 1.53E-02                                  | 1.31E-02   | 7.06E-02 | 4.32E+02                         |
| Phenol                                | -     | -              | 1.86E-02                                  | 4.58E-02   | 1.29E-02 | 2.42E+04                         | 2.88E-02                                    | 6.96E-02   | 2.88E-02 | 3.81E+04                         | 5.89E-02                                  | 1.19E-02   | 5.32E-02 | 7.03E+04                         |

GENERIC ASSESSMENT CRITERIA FOR HUMAN HEALTH - RESIDENTIAL WITH HOME-GROWN PRODUCE



Table 5  
Human Health Generic Assessment Criteria by Pathway for Residential With Home-Grown Produce Scenario

| Compound                                                           | Notes | GrAC<br>(µg/l) | SAC Appropriate to Pathway SOM 1% (mg/kg) |            |          | Soil Saturation<br>Limit (mg/kg) | SAC Appropriate to Pathway SOM 2.5% (mg/kg) |            |          | Soil Saturation<br>Limit (mg/kg) | SAC Appropriate to Pathway SOM 6% (mg/kg) |            |          | Soil Saturation<br>Limit (mg/kg) |
|--------------------------------------------------------------------|-------|----------------|-------------------------------------------|------------|----------|----------------------------------|---------------------------------------------|------------|----------|----------------------------------|-------------------------------------------|------------|----------|----------------------------------|
|                                                                    |       |                | Oral                                      | Inhalation | Combined |                                  | Oral                                        | Inhalation | Combined |                                  | Oral                                      | Inhalation | Combined |                                  |
| Total Petroleum Hydrocarbons                                       |       |                |                                           |            |          |                                  |                                             |            |          |                                  |                                           |            |          |                                  |
| Aliphatic hydrocarbons >EC <sub>9</sub> -EC <sub>8</sub>           |       | 2.05E+04       | 4.99E+03                                  | 4.24E+01   | 4.28E+01 | 3.04E+02                         | 1.13E+04                                    | 7.79E+01   | 7.78E+01 | 5.58E+02                         | 2.50E+04                                  | 1.81E+02   | 1.80E+02 | 1.15E+03                         |
| Aliphatic hydrocarbons >EC <sub>9</sub> -EC <sub>8</sub>           |       | 5.37E+03       | 1.49E+04                                  | 1.04E+02   | 1.03E+02 | 1.44E+02                         | 3.43E+04                                    | 2.31E+02   | 2.31E+02 | 3.22E+02                         | 7.11E+04                                  | 5.29E+02   | 5.29E+02 | 7.36E+02                         |
| Aliphatic hydrocarbons >EC <sub>9</sub> -EC <sub>10</sub>          |       | 4.27E+02       | 1.61E+03                                  | 2.68E+01   | 2.67E+01 | 7.77E+01                         | 2.91E+03                                    | 6.59E+01   | 6.51E+01 | 1.90E+02                         | 4.26E+03                                  | 1.59E+02   | 1.54E+02 | 4.51E+02                         |
| Aliphatic hydrocarbons >EC <sub>10</sub> -EC <sub>12</sub>         |       | 3.39E+01       | 4.57E+03                                  | 1.33E+02   | 1.32E+02 | 4.75E+01                         | 5.51E+03                                    | 3.31E+02   | 3.26E+02 | 1.18E+02                         | 5.98E+03                                  | 7.93E+02   | 7.65E+02 | 2.83E+02                         |
| Aliphatic hydrocarbons >EC <sub>10</sub> -EC <sub>11</sub>         |       | 7.59E+01       | 6.27E+03                                  | 1.11E+03   | 1.06E+03 | 2.37E+01                         | 6.34E+03                                    | 2.78E+03   | 2.41E+03 | 5.91E+01                         | 6.36E+03                                  | 6.67E+03   | 4.34E+03 | 1.42E+02                         |
| Aliphatic hydrocarbons >EC <sub>18</sub> -EC <sub>35</sub>         | (b)   | -              | 6.46E+04                                  | NR         | NR       | 8.48E+00                         | 9.17E+04                                    | NR         | NR       | 2.12E+01                         | 1.10E+05                                  | NR         | NR       | 5.09E+01                         |
| Aliphatic hydrocarbons >EC <sub>35</sub> -EC <sub>44</sub>         | (b)   | -              | 6.46E+04                                  | NR         | NR       | 8.48E+00                         | 9.17E+04                                    | NR         | NR       | 2.12E+01                         | 1.10E+05                                  | NR         | NR       | 5.09E+01                         |
| Aromatic hydrocarbons >EC <sub>16</sub> -EC <sub>9</sub> (styrene) |       | 2.90E+05       | 1.09E+01                                  | 5.25E+02   | 1.89E+01 | 6.26E+02                         | 2.93E+01                                    | 1.36E+03   | 2.49E+01 | 1.44E+03                         | 5.61E+01                                  | 2.79E+03   | 5.69E+01 | 3.35E+03                         |
| Aromatic hydrocarbons >EC <sub>16</sub> -EC <sub>15</sub>          |       | 2.60E+04       | 5.76E+01                                  | 4.74E+01   | 5.45E+01 | 6.13E+02                         | 1.39E+02                                    | 1.19E+02   | 8.36E+01 | 1.50E+03                         | 3.07E+02                                  | 2.77E+02   | 1.94E+02 | 3.58E+02                         |
| Aromatic hydrocarbons >EC <sub>15</sub> -EC <sub>12</sub>          |       | 2.45E+04       | 8.89E+01                                  | 2.58E+05   | 7.52E+01 | 3.64E+02                         | 1.98E+05                                    | 6.49E+02   | 1.79E+02 | 8.99E+02                         | 4.25E+02                                  | 1.68E+03   | 3.81E+02 | 2.15E+03                         |
| Aromatic hydrocarbons >EC <sub>12</sub> -EC <sub>13</sub>          |       | 5.75E+03       | 1.47E+02                                  | 2.85E+03   | 1.45E+02 | 1.69E+02                         | 3.96E+02                                    | 7.07E+03   | 3.96E+02 | 4.19E+02                         | 6.81E+02                                  | 1.66E+04   | 6.74E+02 | 1.00E+03                         |
| Aromatic hydrocarbons >EC <sub>12</sub> -EC <sub>21</sub>          | (b)   | -              | 2.69E+02                                  | NR         | NR       | 5.37E+01                         | 5.45E+02                                    | NR         | NR       | 1.34E+02                         | 3.34E+02                                  | NR         | NR       | 3.21E+02                         |
| Aromatic hydrocarbons >EC <sub>21</sub> -EC <sub>22</sub>          | (b)   | -              | 1.09E+03                                  | NR         | NR       | 4.83E+00                         | 1.47E+02                                    | NR         | NR       | 1.21E+01                         | 1.70E+03                                  | NR         | NR       | 2.90E+01                         |
| Aromatic hydrocarbons >EC <sub>22</sub> -EC <sub>44</sub>          | (b)   | -              | 1.09E+03                                  | NR         | NR       | 4.83E+00                         | 1.47E+03                                    | NR         | NR       | 1.21E+01                         | 1.70E+03                                  | NR         | NR       | 2.90E+01                         |

Notes:

EC - equivalent carbon. GrAC - groundwater assessment criteria. SAC - soil assessment criteria.  
The CLEA model output is colour coded depending upon whether the soil saturation limit has been exceeded.

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Calculated SAC exceeds soil saturation limit and may significantly effect the interpretation of any exceedances since the contribution of the indoor and outdoor vapour pathway to total exposure is >10%. This shading has also been used for the RSCA output where the theoretical solubility limit has been exceeded.  
Calculated SAC exceeds soil saturation limit but will not effect the SSV significantly since the contribution of the indoor and outdoor vapour pathway to total exposure is <10%.  
Calculated SAC does not exceed the soil saturation limit.

For consistency where the theoretical solubility limit within RSCA has been exceeded in production of the GrAC, these cells have also been hatched red.

The SAC for organic compounds are dependent upon soil organic matter (SOM) (%) content. To obtain SOM from total organic carbon (TOC) (%) divide by 0.58. 1% SOM is 0.58% TOC. DL Rowell Soil Science: Methods and Applications, Longmans, 1994.  
SAC for TPH fractions, PAHs naphthalene, acenaphthene and acenaphthylene, MTBE, BTEX and trimethylbenzene compounds were produced using an attenuation factor for the indoor air inhalation pathway of 10 to reduce conservatism associated with the vapour inhalation pathway (Section 10.1.1, SR3)  
(a) SAC for arsenic, benzerie, benzo(a)pyrene, cadmium, chromium VI and lead are derived using the C4SL toxicology data.  
(b) SAC for selenium should not include the inhalation pathway as no expert group HCV has been derived; aliphatic and aromatic hydrocarbons >EC16 should not include inhalation pathway due to their non-volatile nature and inhalation exposure being minimal (oral, dermal and inhalation exposure is compared to the oral HCV); arsenic should only be based on oral contribution (rather than combined) owing to the relative small contribution from inhalation in accordance with the SGV report. The Oral SAC should be adopted for zinc and benzo(a)pyrene.  
(c) SAC for CrIII should be based on the lower of the oral and inhalation SAC (see LQM/CIEH 2015 Section 6.8)  
(d) SAC for elemental mercury, chromium VI and nickel should be based on the inhalation pathway only.  
(e) SAC for 1,3,5-trimethylbenzene is not recorded owing to the lack of toxicological data, SAC for 1,2,4-trimethylbenzene may be used.

GENERIC ASSESSMENT CRITERIA FOR HUMAN HEALTH - RESIDENTIAL WITH HOME-GROWN PRODUCE



**Table 6**  
Human Health Generic Assessment Criteria for Residential with home-grown produce

| Compound                                                          | GrAC for Groundwater (µg/l) | SAC for Soil SOM 1% (mg/kg)                                     | SAC for Soil SOM 2.5% (mg/kg) | SAC for Soil SOM 6% (mg/kg) |
|-------------------------------------------------------------------|-----------------------------|-----------------------------------------------------------------|-------------------------------|-----------------------------|
| <b>Metals</b>                                                     |                             |                                                                 |                               |                             |
| Arsenic                                                           | -                           | 37                                                              | 37                            | 37                          |
| Cadmium                                                           | -                           | 22                                                              | 22                            | 22                          |
| Chromium (III) - trivalent                                        | -                           | 910                                                             | 910                           | 910                         |
| Chromium (VI) - hexavalent                                        | -                           | 21                                                              | 21                            | 21                          |
| Copper                                                            | -                           | 2,500                                                           | 2,500                         | 2,500                       |
| Lead                                                              | -                           | 200                                                             | 200                           | 200                         |
| Elemental Mercury (Hg <sup>0</sup> )                              | 12.90                       | 0.2                                                             | 0.6                           | 1.2                         |
| Inorganic Mercury (Hg <sup>2+</sup> )                             | -                           | 39                                                              | 39                            | 39                          |
| Methyl Mercury (Hg <sup>4+</sup> )                                | 22180                       | 10                                                              | 10                            | 10                          |
| Nickel                                                            | -                           | 130                                                             | 130                           | 130                         |
| Selenium                                                          | -                           | 258                                                             | 258                           | 258                         |
| Zinc                                                              | -                           | 3,900                                                           | 3,900                         | 3,900                       |
| Cyanide (free)                                                    | -                           | 1.4                                                             | 1.4                           | 1.4                         |
| <b>Volatile Organic Compounds</b>                                 |                             |                                                                 |                               |                             |
| Benzene                                                           | 23000                       | 0.20                                                            | 0.41                          | 0.87                        |
| Toluene                                                           | 590000                      | 130                                                             | 300                           | 680                         |
| Ethylbenzene                                                      | 124600                      | 50                                                              | 110                           | 260                         |
| Xylene - m                                                        | 115900                      | 59                                                              | 140                           | 327                         |
| Xylene - o                                                        | 141400                      | 61                                                              | 143                           | 332                         |
| Xylene - p                                                        | 121100                      | 57                                                              | 133                           | 310                         |
| Total xylene                                                      | 115900                      | 57                                                              | 133                           | 310                         |
| Methyl tertiary-Butyl ether (MTBE)                                | 9320000                     | 130                                                             | 250                           | 510                         |
| Trichloroethene                                                   | 64                          | 0.02                                                            | 0.03                          | 0.08                        |
| Tetrachloroethene                                                 | 408                         | 0.2                                                             | 0.4                           | 0.9                         |
| 1,1,1-Trichloroethane                                             | 35900                       | 9                                                               | 18                            | 39                          |
| 1,1,1,2-Tetrachloroethane                                         | 2800                        | 1.2                                                             | 2.8                           | 6.5                         |
| 1,1,2,2-Tetrachloroethane                                         | 18500                       | 1.6                                                             | 3.5                           | 7.7                         |
| Carbon Tetrachloride                                              | 61                          | 0.026                                                           | 0.056                         | 0.127                       |
| 1,2-Dichloroethane                                                | 97                          | 0.007                                                           | 0.011                         | 0.019                       |
| Vinyl Chloride                                                    | 6                           | 0.0006                                                          | 0.0009                        | 0.0014                      |
| 1,2,4-Trimethylbenzene                                            | 5095                        | 1.8                                                             | 4.3                           | 9.7                         |
| 1,3,5-Trimethylbenzene                                            | -                           | NR                                                              | NR                            | NR                          |
| <b>Semi-Volatile Organic Compounds</b>                            |                             |                                                                 |                               |                             |
| Acenaphthene                                                      | 4110                        | 230                                                             | 540                           | 1,170                       |
| Acenaphthylene                                                    | 7950                        | 180                                                             | 440                           | 970                         |
| Anthracene                                                        | -                           | 2,400                                                           | 5,500                         | 10,900                      |
| Benzo(a)anthracene                                                | -                           | 7                                                               | 11                            | 13                          |
| Benzo(b)fluoranthene                                              | -                           | 2.6                                                             | 3.3                           | 3.7                         |
| Benzo(g,h,i)perylene                                              | -                           | 310                                                             | 340                           | 350                         |
| Benzo(k)fluoranthene                                              | -                           | 77                                                              | 92                            | 100                         |
| Chrysene                                                          | -                           | 15                                                              | 22                            | 27                          |
| Dibenzo(a,h)anthracene                                            | -                           | 0.24                                                            | 0.28                          | 0.30                        |
| Fluoranthene                                                      | -                           | 290                                                             | 560                           | 900                         |
| Fluorene                                                          | -                           | 170                                                             | 410                           | 880                         |
| Indeno(1,2,3-cd)pyrene                                            | -                           | 27                                                              | 36                            | 41                          |
| Phenanthrene                                                      | -                           | 100                                                             | 220                           | 440                         |
| Pyrene                                                            | -                           | 620                                                             | 1,240                         | 2,040                       |
| Benzo(a)pyrene                                                    | -                           | 5                                                               | 5                             | 5                           |
| Naphthalene                                                       | 19000                       | 13                                                              | 30                            | 71                          |
| Phenol                                                            | -                           | 120                                                             | 210                           | 390                         |
| <b>Total Petroleum Hydrocarbons</b>                               |                             |                                                                 |                               |                             |
| Aliphatic hydrocarbons EC <sub>5</sub> -EC <sub>8</sub>           | 20000                       | 42                                                              | 78                            | 160                         |
| Aliphatic hydrocarbons >EC <sub>8</sub> -EC <sub>8</sub>          | 5370                        | 100                                                             | 230                           | 530                         |
| Aliphatic hydrocarbons >EC <sub>8</sub> -EC <sub>10</sub>         | 427                         | 27                                                              | 65                            | 154                         |
| Aliphatic hydrocarbons >EC <sub>10</sub> -EC <sub>12</sub>        | 33.9                        | 130 (48)                                                        | 330 (118)                     | 760 (283)                   |
| Aliphatic hydrocarbons >EC <sub>12</sub> -EC <sub>16</sub>        | 0.759                       | 1,100 (24)                                                      | 2,400 (59)                    | 4,300 (142)                 |
| Aliphatic hydrocarbons >EC <sub>16</sub> -EC <sub>35</sub>        | -                           | 65,000 (8)                                                      | 92,000 (21)                   | 110,000                     |
| Aliphatic hydrocarbons >EC <sub>35</sub> -EC <sub>44</sub>        | -                           | 65,000 (8)                                                      | 92,000 (21)                   | 110,000                     |
| Aromatic hydrocarbons >EC <sub>8</sub> -EC <sub>9</sub> (styrene) | 290000                      | 11                                                              | 25                            | 57                          |
| Aromatic hydrocarbons >EC <sub>9</sub> -EC <sub>10</sub>          | 20000                       | 30                                                              | 80                            | 190                         |
| Aromatic hydrocarbons >EC <sub>10</sub> -EC <sub>12</sub>         | 24500                       | 80                                                              | 180                           | 390                         |
| Aromatic hydrocarbons >EC <sub>12</sub> -EC <sub>16</sub>         | 5750                        | 140                                                             | 330                           | 670                         |
| Aromatic hydrocarbons >EC <sub>16</sub> -EC <sub>21</sub>         | -                           | 260                                                             | 540                           | 930                         |
| Aromatic hydrocarbons >EC <sub>21</sub> -EC <sub>35</sub>         | -                           | 1,100                                                           | 1,500                         | 1,700                       |
| Aromatic hydrocarbons >EC <sub>35</sub> -EC <sub>44</sub>         | -                           | 1,100                                                           | 1,500                         | 1,700                       |
| <b>Minerals</b>                                                   |                             |                                                                 |                               |                             |
| Asbestos                                                          | -                           | No asbestos detected with ID or <0.001% dry weight <sup>1</sup> |                               |                             |

**Notes:**

<sup>1</sup> Generic assessment criteria not calculated owing to low volatility of substance and therefore no pathway, or an absence of toxicological data.

NR - SAC for 1,3,5-trimethylbenzene is not recorded owing to the lack of toxicological data, SAC for 1,2,4-trimethylbenzene may be used

EC - equivalent carbon, GrAC - groundwater assessment criteria, SAC - soil assessment criteria.

<sup>1</sup> LOD for weight of asbestos per unit weight of soil calculated on a dry weight basis using PLM, handpicking and gravimetry.

The SAC for organic compounds are dependent on Soil Organic Matter (SOM) (%) content. To obtain SOM from total organic carbon (TOC) (%) divide by 0.58.

1% SOM is 0.58% TOC. DL Rowell Soil Science: Methods and Applications, Longmans, 1994.

SAC and GrAC for TPH fractions, PAHs naphthalene, acenaphthene and acenaphthylene, MTBE, BTEX and trimethylbenzene compounds were produced using an attenuation factor for the indoor air inhalation pathway of 10 to reduce conservatism associated with the vapour inhalation pathway, section 10.1.1, SR3.

(VALUE IN BRACKETS)

The SAC has been set as the model calculated SAC with the saturation limit shown in brackets.

RSK has adopted an approach for petroleum hydrocarbons in accordance with LQM/CIEH whereby the concentration modelled for each petroleum hydrocarbon fraction has been tabulated as the SAC with the corresponding solubility or vapour saturation limits given in brackets.

For consistency where the GrAC exceeds the solubility limit, GrAC has been set at the solubility limit. The GrAC is conservative since concentrations of the chemical are very unlikely to be at sufficient concentration to result in an exceedance of the health criteria value at the point of exposure (i.e. indoor air) provided free-phase product is absent.

# GENERIC ASSESSMENT CRITERIA FOR PHYTOTOXIC EFFECTS

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Several compounds can inhibit plant growth; hence it is important to have generic assessment criteria (GAC) to promote healthy plant growth. In the absence of other published GAC, the GAC have been obtained from legislation (UK and European) and guidance related to the use of sewage sludge on agricultural fields.

The Council of European Communities Sewage Sludge Directive (86/278/EEC) dated 1986, has been transposed into UK law by Statutory Instrument No. 1263, The Sludge (use in Agriculture) Regulations 1989 (Public Health England, Wales and Scotland), as ammended in 1990 and The Sludge (use in Agriculture) Regulations (Northern Ireland) SR No, 245, 1990. In addition the Department of Environment (DoE) produced a Code of Practice (CoP) (Updated 2<sup>nd</sup> Edition) in 2006 which provided guidance on the application of sewage sludge on agricultural land (however the status of this document is unclear as it is on the archive section of the Defra website).

The directive seeks to encourage the use of sewage sludge in agriculture and to regulate its use in such a way as to “**prevent harmful effects on soil, vegetation, animals and man**”. To this end, it prohibits the use of untreated sludge on agricultural land unless it is injected or incorporated into the soil. Treated sludge is defined as having undergone "biological, chemical or heat treatment, long-term storage or any other appropriate process so as significantly to reduce its fermentability and the health hazards resulting from its use". To provide protection against potential health risks from residual pathogens, sludge must not be applied to soil in which fruit and vegetable crops are growing, or less than ten months before fruit and vegetable crops are to be harvested. Grazing animals must not be allowed access to grassland or forage land less than three weeks after the application of sludge.

The specified limits of concentrations of selected elements in soil are presented in Table 4 of the updated 2<sup>nd</sup> Edition of the DoE Code of Practice and are designed to protect plant growth. It is noted that these values are more stringent than the values set in current UK regulations. However since they were ammended following recommendations from the Independent Scientific Committee in 1993. (MAFF/DOE 1993). The GAC are presented in Table 1.

**Table 1: Generic assessment criteria**

| Determinant                                                                                                                                                                                        | Generic assessment criteria (mg/kg) |              |              |         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|--------------|--------------|---------|
|                                                                                                                                                                                                    | pH 5.0 < 5.5                        | pH 5.5 < 6.0 | pH 6.0 < 7.0 | pH >7.0 |
| Zinc                                                                                                                                                                                               | 200                                 | 200          | 200          | 300     |
| Copper                                                                                                                                                                                             | 80                                  | 100          | 135          | 200     |
| Nickel                                                                                                                                                                                             | 50                                  | 60           | 75           | 110     |
| Lead                                                                                                                                                                                               | 300                                 | 300          | 300          | 300     |
| Cadmium                                                                                                                                                                                            | 3                                   | 3            | 3            | 3       |
| Mercury                                                                                                                                                                                            | 1                                   | 1            | 1            | 1       |
| Note: Only compounds with assessment criteria documented within the Directive 86/278/EEC have been included, although criteria for 5 additional compounds have been presented within the 2006 CoP. |                                     |              |              |         |