

23 December 2021

JBr.E13343/3-L1

Reef Estates  
51 Welbeck Street  
London  
W1G 9BG

By email

For the attention of Mr Philip Duckworth

Dear Sirs,

**RE: GRAVESEND, THE CHARTER - (PLANNING REF: 20200343– Condition 9; Parts 3 and 4)**

**Introduction**

DTS Raeburn Limited were commissioned by Reef Estates to prepare a remediation strategy for the proposed development. The strategy has been prepared based on the conclusions and recommendations DTS Raeburn Report E13343/1: 'Report on a Ground Investigation for Proposed Residential Development at Bank Street, Gravesend (Eastern Quarter)' (June 2020)

**Remediation Strategy**

The remediation strategy comprises the inclusion of a minimum 500mm-thickness of suitably clean 'capping' material above any proposed landscaped areas. This pathway intervention measure will mitigate the risk of exposure to soils impacted by elevated concentrations of arsenic, lead, PAH compounds and asbestos and ensure that pathway linkages cannot be completed with respect to the long-term health of future site users post-development

The proposed areas of landscaping are indicated on the drawing included as Appendix 1, which has been submitted as part of the planning application. These include:

- Areas of proposed planting (ground cover and shrubs) at various discreet locations across the site (total area of approximately 565m<sup>2</sup>)
- An area of proposed planting (lawn) within the north western section of the site (approximately 400m<sup>2</sup>). It is understood that this area will be a wildflower seed meadow.

It is understood that all other areas of the site will be occupied by buildings or hardstanding at ground level

Details of the proposed remedial measures are presented below.

**Remedial Measures**

It is proposed that the capping materials will comprise clean naturally occurring topsoil/sub-soil. Documentation confirming the source of the material shall be obtained prior to placement.



Moor Lane, Witton, Birmingham, B6 7HG, UK  
Tel: +44 (0)121 344 3826 Fax: +44(0)121 344 4754  
email: [enquiries@dts-raeburn.co.uk](mailto:enquiries@dts-raeburn.co.uk)

[www.dts-raeburn.co.uk](http://www.dts-raeburn.co.uk)

DTS Raeburn Ltd is registered in Scotland No. 222975

Compliance testing shall be undertaken at a rate of not less than one sample per 500m<sup>3</sup> to verify that the levels of contamination within the imported topsoil/sub-soil are suitable for the proposed use. The test results shall be compared to the assessment criteria included in Appendix 2 of this letter.

A photographic record shall be maintained to verify that a minimum 500mm-thickness of topsoil has been placed across all proposed landscaped areas.

#### **Unforeseen Contamination**

Procedures shall be established on site during the construction phase for the assessment and potential remediation of any unforeseen contamination, in the event that this is identified during the course of the works. This shall include the inspection and assessment of any such contamination, together with its appraisal by a suitably qualified environmental specialist. Any proposed action/remediation will be documented and communicated to the Local Planning Authority for approval prior to implementation and/or backfilling of the affected area.

#### **Verification Report**

A verification report shall be produced on completion of the remediation works and shall contain the following information:

- Documentation confirming the source of any imported topsoil/subsoil
- Results of laboratory compliance testing of imported topsoil/subsoil, verifying that the levels of contamination are suitable for its intended use
- Details of any unforeseen contamination (if encountered) including its extent, assessment and any remedial measures as approved.

We trust that the above is satisfactory, however, if you have any queries please do not hesitate to contact us.

Yours faithfully,

**For DTS RAEBURN LTD**



**James Brown**

**Principal Geoenvironmental Engineer**

#### **Encl:**

Appendix 1 – Drawing produced by Hyland Edgar Driver showing the proposed landscaping arrangement (1 page)

Appendix 2 – Compliance Criteria for Imported Topsoils and Subsoils (2 pages)

## **APPENDIX 1**

**Drawing produced by Hyland Edgar Driver showing the proposed  
landscaping arrangement  
(1 page)**

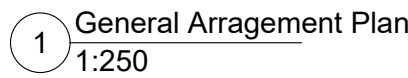
**H E D**

Hyland Edgar Driver  
**Landscape Architects  
& Urban Designers**  
London & Winchester

One Wessex Way Colden Common Winchester SO21 1WG  
Waterloo Court 10 Theed Street London SE1 1ST

t. 01962 711 600  
t. 020 7903 9636

|                                                        |            |            |
|--------------------------------------------------------|------------|------------|
| CLIENT                                                 |            |            |
| REFEED DEVELOPMENTS                                    |            |            |
| DATE                                                   | DRAWN BY   | CHECKED BY |
| MARCH 2020                                             | BA         | DP         |
| DRAWING STATUS                                         | SCALE @ A1 |            |
| FOR PLANNING                                           | 1:250      |            |
| PROJECT                                                |            |            |
| CHARTER HOUSE AND<br>HORN YARD RESIDENTIAL DEVELOPMENT |            |            |
| DRAWING TITLE                                          |            |            |
| GENERAL ARRANGEMENT PLAN                               |            |            |
| DRAWING NUMBER                                         |            | REVISION   |
| L-1344-HED-ZX-EX-DR-L-1001                             |            | P02        |



This courtyard is a shady slot garden between the buildings.

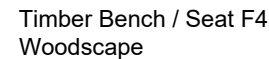
### Shrubs

Robust evergreen low growing plants. Pot grown. 3 or 5Lt pots with well-established roots and forms typical to the species. To include the following:

Cotoneaster conspicuus 'Decorus'

Prunus 'Otto Luyken'

Pyracantha 'Red Cushion'



1 Precedent Images  
N.T.S

## **APPENDIX 2**

### **Compliance Criteria for Imported Topsoils and Subsoils (2 pages)**

## Appendix 2 – Compliance Criteria for Imported Topsoils and Subsoils

The results of laboratory testing of imported subsoils and topsoil to be placed within the upper 500mm of landscaped areas within the proposed development should meet the Compliance Criteria presented in the Table below.

The proposed landscaped areas surrounding the residential development have been classified as a Public Open Space (residential) end use, in accordance with SP1010 – Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination (DEFRA, 2014). Were necessary, a conservative SOM of 1% has been assumed.

The criteria have been selected from the following sources as noted in the final column of the Table.

1. Category 4 Screening Levels (C4SLs), DEFRA (2014)
2. Suitable for Use Levels (S4ULs) published by Land Quality Management Limited (LQM) and the Chartered Institute of Environmental Health (CIEH) (2015)
3. There are no current authoritative assessment criteria for asbestos in soils. However, ICRC Guidance Note 64/85 (1990) 'Asbestos on contaminated sites' states that "concentrations of respirable fibres of asbestos in soil as low as 0.001% by weight may, in loose dry soils, give rise to measurable levels of asbestos if disturbed". The Institute of Environmental Medicine (IOM) (1988) also recommended an Action Level of 0.001%, above which measures should be taken to reduce exposure. The adoption of this Action Level is considered suitably conservative for topsoil beneath landscaped areas, which would normally be expected to retain some natural moisture content.

| Determinant            | Compliance Criteria (mg/kg) | Source of Criteria |
|------------------------|-----------------------------|--------------------|
| arsenic                | 79                          | 1                  |
| cadmium                | 220                         | 1                  |
| chromium (total)       | 23                          | 1                  |
| copper                 | 12,000                      | 2                  |
| lead                   | 630                         | 1                  |
| selenium               | 1,100                       | 2                  |
| mercury (inorganic)    | 120                         | 2                  |
| nickel                 | 230                         | 2                  |
| zinc                   | 81,000                      | 2                  |
| boron                  | 21,000                      | 2                  |
| phenol <sup>1</sup>    | 440                         | 2                  |
| <b>PAH</b>             |                             |                    |
| acenaphthene           | 15,000                      | 2                  |
| acenaphthylene         | 15,000                      | 2                  |
| anthracene             | 74,000                      | 2                  |
| benzo(a)anthracene     | 29                          | 2                  |
| benzo(a)pyrene         | 5.7                         | 2                  |
| benzo(b)fluoranthene   | 7.1                         | 2                  |
| benzo(g,h,i)perylene   | 640                         | 2                  |
| benzo(k)fluoranthene   | 190                         | 2                  |
| chrysene               | 57                          | 2                  |
| dibenzo(a,h)anthracene | 0.57                        | 2                  |

|                                                       |         |   |
|-------------------------------------------------------|---------|---|
| fluoranthene                                          | 3,100   | 2 |
| fluorene                                              | 9,900   | 2 |
| indeno(1,2,3-cd)pyrene                                | 82      | 2 |
| napthalene                                            | 4,900   | 2 |
| phenanthrene                                          | 3,100   | 2 |
| pyrene                                                | 7,400   | 2 |
| <b>TPH and BTEX</b>                                   |         |   |
| aliphatic C <sub>5</sub> -C <sub>6</sub> <sup>2</sup> | 304     | 2 |
| aliphatic C <sub>6</sub> -C <sub>8</sub>              | 60,000  | 2 |
| aliphatic C <sub>8</sub> -C <sub>10</sub>             | 13,000  | 2 |
| aliphatic C <sub>10</sub> -C <sub>12</sub>            | 13,000  | 2 |
| aliphatic C <sub>12</sub> -C <sub>16</sub>            | 13,000  | 2 |
| aliphatic C <sub>16</sub> -C <sub>35</sub>            | 250,000 | 2 |
| aliphatic C <sub>35</sub> -C <sub>44</sub>            | 250,000 | 2 |
| aromatic EC <sub>5</sub> -EC <sub>7</sub>             | 56,000  | 2 |
| aromatic EC <sub>7</sub> -EC <sub>8</sub>             | 56,000  | 2 |
| aromatic EC <sub>8</sub> -EC <sub>10</sub>            | 5,000   | 2 |
| aromatic EC <sub>10</sub> -EC <sub>12</sub>           | 5,000   | 2 |
| aromatic EC <sub>12</sub> -EC <sub>16</sub>           | 5,100   | 2 |
| aromatic EC <sub>16</sub> -EC <sub>21</sub>           | 3,800   | 2 |
| aromatic EC <sub>21</sub> -EC <sub>35</sub>           | 3,800   | 2 |
| aromatic EC <sub>35</sub> -EC <sub>44</sub>           | 3,800   | 2 |
| benzene                                               | 140     | 1 |
| toluene <sup>2</sup>                                  | 56,000  | 2 |
| ethylbenzene <sup>2</sup>                             | 24,000  | 2 |
| m&p-xylene <sup>2</sup>                               | 41,000  | 2 |
| o-xylene <sup>2</sup>                                 | 41,000  | 2 |
| asbestos                                              | 0.001%  | 3 |

<sup>1</sup> Based on a threshold protective of direct skin contact with phenol (most conservative)

<sup>2</sup> SGV/GAC capped at the lower of the vapour or aqueous saturation limits in soil