

**APPENDIX VI**

**Risk Assessment Data Sheets & Supporting Data**



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|-------------|---------------|-----------|-----------|
| Job No:     | <b>S7/028</b> |           |           |
| Sheet No:   | <b>1 of 1</b> |           |           |
| Rev:        | <b>0</b>      |           |           |
| By:         | <b>AJS</b>    |           |           |
| Checked By: | <b>SMB</b>    |           |           |
| Date:       | <b>25</b>     | <b>05</b> | <b>07</b> |

Description:

### Tier 2 Soil Guideline Values

| Contaminant  | Standard Land Use                                |                            |                                                     |                                            | Upper Bound Value<br>(95% Confidence) |
|--------------|--------------------------------------------------|----------------------------|-----------------------------------------------------|--------------------------------------------|---------------------------------------|
|              | Residential with<br>plant uptake<br>SGV (mg/kg)* | Allotments<br>SGV (mg/kg)* | Residential without<br>plant uptake<br>SGV (mg/kg)* | Commercial /<br>Industrial<br>SGV (mg/kg)* |                                       |
| Arsenic      | 20                                               | 20                         | 20                                                  | 500                                        | 21.58                                 |
| Lead (log)*  | 2.65                                             | 2.65                       | 2.65                                                | 2.88                                       | 1.92                                  |
| Nickel       | 50                                               | 50                         | 75                                                  | 5000                                       | 19.2                                  |
| Cadmium**    | 2                                                | 8                          | 30                                                  | 1400                                       | 0.10                                  |
| Mercury      | 8                                                | 8                          | 15                                                  | 480                                        | 0.23                                  |
| Chromium^^   | 130                                              | 130                        | 200                                                 | 5000                                       | 5.00                                  |
| Selenium     | 35                                               | 35                         | 260                                                 | 8000                                       | 0.54                                  |
| Phenol       | 150                                              | 155                        | 34,400                                              | 43,000                                     | 0.30                                  |
| Toluene      | 7                                                | 73                         | 8                                                   | 350                                        |                                       |
| Ethylbenzene | 21                                               | 43                         | 41                                                  | 48,000                                     |                                       |

\* SGVs are based on a sandy soil as defined in CLR10;

\*\* Cadmium SGVs are pH dependant and are based on a pH of 7 (SGV = 1mg/kg for a soil pH 6; 8mg/kg for a soil pH 8);

^^ SGV assumes Chromium is present as Chromium(VI);

- Upper Bound Values for copper and zinc not calculated as they are not considered to typically present a risk to human health;

\* The geometric mean, rather than the arithmetic mean, is used as the basis for the comparison of soil concentration data with the Soil Guideline Value (450mg/kg). All calculations are therefore transposed to log after SEGH (1993) Lead in Soil: Recommended Guidelines, Wixson, BG and Davies, BE (eds.) Society for Environmental Geochemistry and Health, Science Reviews.

| Summary                                                     |                           |                 |
|-------------------------------------------------------------|---------------------------|-----------------|
|                                                             | CLEA Residential + Plants | CLEA Commercial |
| Number of contaminants                                      | 8                         | 8               |
| Number of contaminants <b>with no</b> thickness calculation | 0                         | 8               |
| Breakdown - Number for which no TV specified                | 0                         | 8               |
| Breakdown - Number for which no soil specified              | 0                         | 0               |
| Breakdown - Number for which no cover specified             | 0                         | 0               |
| Breakdown - Number for which cover > TV                     | 0                         | 0               |
|                                                             |                           |                 |
| Number of contaminants <b>with</b> thickness calculation    | 8                         | 0               |
| Breakdown - Number for which no cover required              | 7                         | 0               |
| Breakdown - Number for which cover required                 | 1                         | 0               |
| <b>Overall thickness of cover required</b>                  | <b>82</b>                 | <b>0</b>        |

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Description:

### CLEA Statistical Tests (Metals & Organics) <sup>1</sup>

| Arsenic                    |       |
|----------------------------|-------|
| Upper Bound Value          |       |
| Mean                       | 13.22 |
| Number of samples          | 6.00  |
| Standard Deviation         | 10.16 |
| T Value                    | 2.015 |
| UBV (95%)                  | 21.58 |
| Maximum Value Test         |       |
| Mean                       | 0.994 |
| Maximum Value (log x = y)  | 1.447 |
| Standard Deviation (S)     | 0.379 |
| Outlier Critical Value (T) | 1.73  |
| 10% Value (Tcrit)          | 1.73  |

| Chromium (VI)              |       |
|----------------------------|-------|
| Upper Bound Value          |       |
| Mean                       | 5.00  |
| Number of samples          | 6.00  |
| Standard Deviation         | 0.00  |
| T Value                    | 2.015 |
| UBV (95%)                  | 5.00  |
| Maximum Value Test         |       |
| Mean                       | 0.70  |
| Maximum Value (log x = y)  | 0.70  |
| Standard Deviation (S)     | 0.00  |
| Outlier Critical Value (T) | 1.73  |
| 10% Value (Tcrit)          | 1.73  |

| Cadmium                    |       |
|----------------------------|-------|
| Upper Bound Value          |       |
| Mean                       | 0.10  |
| Number of samples          | 6.00  |
| Standard Deviation         | 0.00  |
| T Value                    | 2.015 |
| UBV (95%)                  | 0.10  |
| Maximum Value Test         |       |
| Mean                       | -1.00 |
| Maximum Value (log x = y)  | -1.00 |
| Standard Deviation (S)     | 0.00  |
| Outlier Critical Value (T) | 1.73  |
| 10% Value (Tcrit)          | 1.73  |

| Nickel                     |       |
|----------------------------|-------|
| Upper Bound Value          |       |
| Mean                       | 15.22 |
| Number of samples          | 6.00  |
| Standard Deviation         | 4.87  |
| T Value                    | 2.015 |
| UBV (95%)                  | 19.22 |
| Maximum Value Test         |       |
| Mean                       | 1.16  |
| Maximum Value (log x = y)  | 1.30  |
| Standard Deviation (S)     | 0.16  |
| Outlier Critical Value (T) | 1.73  |
| 10% Value (Tcrit)          | 1.73  |

| Lead <sup>2</sup>          |       |
|----------------------------|-------|
| Upper Bound Value          |       |
| Mean                       | 37.52 |
| Number of samples          | 6.00  |
| Standard Deviation         | 48.76 |
| T Value                    | 2.015 |
| UBV (95%)                  | 1.92  |
| Maximum Value Test         |       |
| Mean                       | 1.02  |
| Maximum Value (log x = y)  | 2.11  |
| Standard Deviation (S)     | 1.09  |
| Outlier Critical Value (T) | 1.73  |
| 10% Value (Tcrit)          | 1.73  |

| Mercury                    |       |
|----------------------------|-------|
| Upper Bound Value          |       |
| Mean                       | 0.16  |
| Number of samples          | 6.00  |
| Standard Deviation         | 0.09  |
| T Value                    | 2.015 |
| UBV (95%)                  | 0.23  |
| Maximum Value Test         |       |
| Mean                       | -0.84 |
| Maximum Value (log x = y)  | -0.49 |
| Standard Deviation (S)     | 0.21  |
| Outlier Critical Value (T) | 1.73  |
| 10% Value (Tcrit)          | 1.73  |

| Selenium                   |       |
|----------------------------|-------|
| Upper Bound Value          |       |
| Mean                       | 0.40  |
| Number of samples          | 6.00  |
| Standard Deviation         | 0.18  |
| T Value                    | 2.015 |
| UBV (95%)                  | 0.54  |
| Maximum Value Test         |       |
| Mean                       | -0.44 |
| Maximum Value (log x = y)  | -0.17 |
| Standard Deviation (S)     | 0.19  |
| Outlier Critical Value (T) | 1.73  |
| 10% Value (Tcrit)          | 1.73  |

| Phenol                     |       |
|----------------------------|-------|
| Upper Bound Value          |       |
| Mean                       | 0.30  |
| Number of samples          | 6.00  |
| Standard Deviation         | 0.00  |
| T Value                    | 2.015 |
| UBV (95%)                  | 0.30  |
| Maximum Value Test         |       |
| Mean                       | -0.52 |
| Maximum Value (log x = y)  | -0.52 |
| Standard Deviation (S)     | 0.00  |
| Outlier Critical Value (T) | 1.73  |
| 10% Value (Tcrit)          | 1.73  |

<sup>1</sup> CLEA statistics derived from DEFRA/EA R&D Publication CLR7, Appendix A, Assessment of risks to Human Health from Land Contamination: An overview of the development of soil guideline values and related research, March (2002);

<sup>2</sup> For Lead, the statistics is based on the 'geometric' mean rather than the 'arithmetic' mean, which is used for other contaminants.



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Description:

### Tier 2 Soil Screening Values - PAH

| Contaminant                 | Standard Land Use                                     |                                             |                                    | Upper Bound Value<br>(95% Confidence) |
|-----------------------------|-------------------------------------------------------|---------------------------------------------|------------------------------------|---------------------------------------|
|                             | Residential with plant uptake <sup>1</sup><br>(mg/kg) | Residential without plant uptake<br>(mg/kg) | Commercial / Industrial<br>(mg/kg) |                                       |
| Naphthalene                 | 37                                                    | -                                           | -                                  | 0.15                                  |
| Acenaphthene                | 317                                                   | -                                           | -                                  | 0.10                                  |
| Fluorene                    | 74                                                    | -                                           | -                                  | 0.15                                  |
| Anthracene                  | 17                                                    | -                                           | -                                  | 0.43                                  |
| Fluoranthene                | 58                                                    | -                                           | -                                  | 3.02                                  |
| Pyrene                      | 280                                                   | -                                           | -                                  | 2.45                                  |
| Benzo(a)anthracene          | 5.8                                                   | -                                           | -                                  | 1.00                                  |
| Chrysene                    | 3.3                                                   | -                                           | -                                  | 0.87                                  |
| Benzo(b)fluoranthene        | 6.4                                                   | -                                           | -                                  | 0.49                                  |
| Benzo(k)fluoranthene        | 9.2                                                   | -                                           | -                                  | 0.67                                  |
| Benzo(a)pyrene <sup>+</sup> | 1.1                                                   | 1.5                                         | 36                                 | 0.60                                  |
| Dibenzo(a,h)anthracene      | 1.3                                                   | -                                           | -                                  | 0.10                                  |
| Indeno(1,2,3-cd)pyrene      | 10.4                                                  | -                                           | -                                  | 0.22                                  |
| Benzo(g,h,i)perylene        | 36                                                    | -                                           | -                                  | 0.22                                  |

<sup>1</sup> Toxicological and Physico-chemical parameters for tentative non-validated PAH Soil Screening Values taken from available DEFRA and Environment Agency published documentation. Where no UK published physico-chemical or toxicological data was available, this has been obtained from review of other available toxicological data such as that given in USEPA, RIVM and TPH Criteria Working Group reports, as well as risk modelling databases such as RISC and RBCA;

<sup>+</sup> Tentative non-validated SGV based on an assessment of TOX Report 2, Benzo(a)pyrene;

- Based on sandy soil with an SOM of 2.5% and pH7.

[illegible]

| Summary                                                     |                           |                 |
|-------------------------------------------------------------|---------------------------|-----------------|
|                                                             | CLEA Residential + Plants | CLEA Commercial |
| Number of contaminants                                      | 14                        | 14              |
| Number of contaminants <b>with no</b> thickness calculation | 0                         | 14              |
| Breakdown - Number for which no TV specified                | 0                         | 14              |
| Breakdown - Number for which no soil specified              | 0                         | 0               |
| Breakdown - Number for which no cover specified             | 0                         | 0               |
| Breakdown - Number for which cover > TV                     | 0                         | 0               |
|                                                             |                           |                 |
| Number of contaminants <b>with</b> thickness calculation    | 14                        | 0               |
| Breakdown - Number for which no cover required              | 14                        | 0               |
| Breakdown - Number for which cover required                 | 0                         | 0               |
| <b>Overall thickness of cover required</b>                  | <b>0</b>                  | <b>0</b>        |

\*Cc is initially assumed to be 0.5 x Target Value.



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### CLEA Statistical Tests (PAH)

| Naphthalene                |        |
|----------------------------|--------|
| Upper Bound Value          |        |
| Mean                       | 0.12   |
| Number of samples          | 6.00   |
| Standard Deviation         | 0.04   |
| T Value                    | 2.015  |
| UBV (95%)                  | 0.15   |
| Maximum Value Test         |        |
| Mean                       | -0.950 |
| Maximum Value (log x = y)  | -0.699 |
| Standard Deviation (S)     | 0.123  |
| Outlier Critical Value (T) |        |
| 10% Value (Tcrit)          | 1.73   |

| Fluorene                   |       |
|----------------------------|-------|
| Upper Bound Value          |       |
| Mean                       | 0.12  |
| Number of samples          | 6.00  |
| Standard Deviation         | 0.04  |
| T Value                    | 2.015 |
| UBV (95%)                  | 0.15  |
| Maximum Value Test         |       |
| Mean                       | -0.95 |
| Maximum Value (log x = y)  | -0.70 |
| Standard Deviation (S)     | 0.12  |
| Outlier Critical Value (T) |       |
| 10% Value (Tcrit)          | 1.73  |

| Acenaphthene               |       |
|----------------------------|-------|
| Upper Bound Value          |       |
| Mean                       | 0.10  |
| Number of samples          | 6.00  |
| Standard Deviation         | 0.00  |
| T Value                    | 2.015 |
| UBV (95%)                  | 0.10  |
| Maximum Value Test         |       |
| Mean                       | -1.00 |
| Maximum Value (log x = y)  | -1.00 |
| Standard Deviation (S)     | 0.00  |
| Outlier Critical Value (T) |       |
| 10% Value (Tcrit)          | 1.73  |

| Pyrene                     |       |
|----------------------------|-------|
| Upper Bound Value          |       |
| Mean                       | 1.23  |
| Number of samples          | 6.00  |
| Standard Deviation         | 1.48  |
| T Value                    | 2.015 |
| UBV (95%)                  | 2.45  |
| Maximum Value Test         |       |
| Mean                       | -0.25 |
| Maximum Value (log x = y)  | 0.59  |
| Standard Deviation (S)     | 0.66  |
| Outlier Critical Value (T) |       |
| 10% Value (Tcrit)          | 1.73  |

| Anthracene                 |        |
|----------------------------|--------|
| Upper Bound Value          |        |
| Mean                       | 0.23   |
| Number of samples          | 6.00   |
| Standard Deviation         | 0.24   |
| T Value                    | 2.015  |
| UBV (95%)                  | 0.43   |
| Maximum Value Test         |        |
| Mean                       | -0.780 |
| Maximum Value (log x = y)  | -0.155 |
| Standard Deviation (S)     | 0.361  |
| Outlier Critical Value (T) |        |
| 10% Value (Tcrit)          | 1.73   |

| Fluoranthene               |       |
|----------------------------|-------|
| Upper Bound Value          |       |
| Mean                       | 1.47  |
| Number of samples          | 6.00  |
| Standard Deviation         | 1.88  |
| T Value                    | 2.015 |
| UBV (95%)                  | 3.02  |
| Maximum Value Test         |       |
| Mean                       | -0.22 |
| Maximum Value (log x = y)  | 0.69  |
| Standard Deviation (S)     | 0.69  |
| Outlier Critical Value (T) |       |
| 10% Value (Tcrit)          | 1.73  |

| Benzo(a)anthracene         |       |
|----------------------------|-------|
| Upper Bound Value          |       |
| Mean                       | 0.52  |
| Number of samples          | 6.00  |
| Standard Deviation         | 0.59  |
| T Value                    | 2.015 |
| UBV (95%)                  | 1.00  |
| Maximum Value Test         |       |
| Mean                       | -0.52 |
| Maximum Value (log x = y)  | 0.20  |
| Standard Deviation (S)     | 0.49  |
| Outlier Critical Value (T) |       |
| 10% Value (Tcrit)          | 1.73  |

| Indeno(1,2,3cd)pyrene      |       |
|----------------------------|-------|
| Upper Bound Value          |       |
| Mean                       | 0.15  |
| Number of samples          | 6.00  |
| Standard Deviation         | 0.08  |
| T Value                    | 2.015 |
| UBV (95%)                  | 0.22  |
| Maximum Value Test         |       |
| Mean                       | -0.87 |
| Maximum Value (log x = y)  | -0.52 |
| Standard Deviation (S)     | 0.21  |
| Outlier Critical Value (T) |       |
| 10% Value (Tcrit)          | 1.73  |

| Chrysene                   |       |
|----------------------------|-------|
| Upper Bound Value          |       |
| Mean                       | 0.43  |
| Number of samples          | 6.00  |
| Standard Deviation         | 0.53  |
| T Value                    | 2.015 |
| UBV (95%)                  | 0.87  |
| Maximum Value Test         |       |
| Mean                       | -0.62 |
| Maximum Value (log x = y)  | 0.15  |
| Standard Deviation (S)     | 0.50  |
| Outlier Critical Value (T) |       |
| 10% Value (Tcrit)          | 1.73  |

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| Checked By: | <b>SMB</b>    |  |  |

**Description:**

Date: **25 05 07**

### CLEA Statistical Tests (PAH)

| <b>Dibenz(a,h)anthracene</b> |        |
|------------------------------|--------|
| Upper Bound Value            |        |
| Mean                         | 0.10   |
| Number of samples            | 6.00   |
| Standard Deviation           | 0.00   |
| T Value                      | 2.015  |
| UBV (95%)                    | 0.10   |
| Maximum Value Test           |        |
| Mean                         | -1.000 |
| Maximum Value (log x = y)    | -1.000 |
| Standard Deviation (S)       | 0.000  |
| Outlier Critical Value (T)   |        |
| 10% Value (Tcrit)            | 1.73   |

| <b>Benzo(g,h,i)perylene</b> |       |
|-----------------------------|-------|
| Upper Bound Value           |       |
| Mean                        | 0.15  |
| Number of samples           | 6.00  |
| Standard Deviation          | 0.08  |
| T Value                     | 2.015 |
| UBV (95%)                   | 0.22  |
| Maximum Value Test          |       |
| Mean                        | -0.87 |
| Maximum Value (log x = y)   | -0.52 |
| Standard Deviation (S)      | 0.21  |
| Outlier Critical Value (T)  | 1.67  |
| 10% Value (Tcrit)           | 1.73  |

| <b>Benzo(k)fluoranthene</b> |       |
|-----------------------------|-------|
| Upper Bound Value           |       |
| Mean                        | 0.38  |
| Number of samples           | 6.00  |
| Standard Deviation          | 0.35  |
| T Value                     | 2.015 |
| UBV (95%)                   | 0.67  |
| Maximum Value Test          |       |
| Mean                        | -0.57 |
| Maximum Value (log x = y)   | 0.00  |
| Standard Deviation (S)      | 0.41  |
| Outlier Critical Value (T)  | 1.40  |
| 10% Value (Tcrit)           | 1.73  |

| <b>Benzo(b)fluoranthene</b> |       |
|-----------------------------|-------|
| Upper Bound Value           |       |
| Mean                        | 0.30  |
| Number of samples           | 6.00  |
| Standard Deviation          | 0.23  |
| T Value                     | 2.015 |
| UBV (95%)                   | 0.49  |
| Maximum Value Test          |       |
| Mean                        | -0.63 |
| Maximum Value (log x = y)   | -0.15 |
| Standard Deviation (S)      | 0.34  |
| Outlier Critical Value (T)  | 1.40  |
| 10% Value (Tcrit)           | 1.73  |

| <b>Benzo(a)pyrene</b>      |       |
|----------------------------|-------|
| Upper Bound Value          |       |
| Mean                       | 0.30  |
| Number of samples          | 6.00  |
| Standard Deviation         | 0.36  |
| T Value                    | 2.015 |
| UBV (95%)                  | 0.60  |
| Maximum Value Test         |       |
| Mean                       | -0.73 |
| Maximum Value (log x = y)  | 0.00  |
| Standard Deviation (S)     | 0.43  |
| Outlier Critical Value (T) | 1.70  |
| 10% Value (Tcrit)          | 1.73  |

**Physico Chemical Input Parameters (Polynuclear Aromatic Hydrocarbons and Petroleum Hydrocarbons)**

| Determinand            | Molecular Weight<br>(g/mol) |                | Diffusion<br>Coefficient In Air<br>(cm <sup>2</sup> /s) |              | Diffusion<br>Coefficient In<br>Water (cm <sup>2</sup> /s) |              | Log of Organic<br>Carbon Partition<br>(g.cm <sup>3</sup> /g.cm <sup>3</sup> ) |              | Log of Octanol Water<br>Partition Coefficient<br>(cm <sup>3</sup> /g) |              | Henry's Law<br>Constant<br>(Dimensionless) |                | Vapour<br>Pressure<br>(25°C) |              | Boiling Point<br>(K) |              | Solubility<br>(mg/L) |              |
|------------------------|-----------------------------|----------------|---------------------------------------------------------|--------------|-----------------------------------------------------------|--------------|-------------------------------------------------------------------------------|--------------|-----------------------------------------------------------------------|--------------|--------------------------------------------|----------------|------------------------------|--------------|----------------------|--------------|----------------------|--------------|
|                        |                             | Ref.           |                                                         | Ref.         |                                                           | Ref.         |                                                                               | Ref.         |                                                                       | Ref.         |                                            | Ref.           |                              | Ref.         |                      | Ref.         |                      | Ref.         |
| <b>PAH</b>             |                             |                |                                                         |              |                                                           |              |                                                                               |              |                                                                       |              |                                            |                |                              |              |                      |              |                      |              |
| Acenaphthene           | 154.2                       | <sup>2,4</sup> | 4.20E-06                                                | <sup>2</sup> | 7.00E-10                                                  | <sup>2</sup> | 3.85E+00                                                                      | <sup>2</sup> | 3.92E+00                                                              | <sup>2</sup> | 4.92E-03                                   | <sup>2</sup>   | 1.52E+00                     | <sup>2</sup> | 5.52E+02             | <sup>2</sup> | 3.80E+00             | <sup>2</sup> |
| Acenaphthylene         | 152.2                       | <sup>2,4</sup> | 5.40E-06                                                | <sup>4</sup> | 6.60E-10                                                  | <sup>4</sup> | 3.40E+00                                                                      | <sup>2</sup> | 4.00E+00                                                              | <sup>2</sup> | 3.40E-03                                   | <sup>2</sup>   | 4.14E+00                     | <sup>2</sup> | 5.43E+02             | <sup>2</sup> | 1.61E+01             | <sup>2</sup> |
| Anthracene             | 178.2                       | <sup>2,4</sup> | 3.20E-06                                                | <sup>2</sup> | 7.74E-10                                                  | <sup>2</sup> | 4.47E+00                                                                      | <sup>2</sup> | 4.54E+00                                                              | <sup>2</sup> | 1.60E-03                                   | <sup>2</sup>   | 7.78E-02                     | <sup>2</sup> | 6.13E+01             | <sup>2</sup> | 4.50E-02             | <sup>2</sup> |
| Benz(a)anthracene      | 228.0                       | <sup>2,4</sup> | 5.10E-02                                                | <sup>2</sup> | 9.00E-10                                                  | <sup>2</sup> | 4.00E+00                                                                      | <sup>2</sup> | 5.91E+00                                                              | <sup>2</sup> | 2.35E-04                                   | <sup>2</sup>   | 6.06E-04                     | <sup>2</sup> | 7.08E+02             | <sup>2</sup> | 1.10E-02             | <sup>2</sup> |
| Benzo(a)pyrene         | 252.3                       | <sup>2,4</sup> | 4.30E-06                                                | <sup>2</sup> | 9.00E-10                                                  | <sup>2</sup> | 6.01E+00                                                                      | <sup>2</sup> | 6.04E+00                                                              | <sup>2</sup> | 1.86E-05                                   | <sup>2</sup>   | 2.13E-05                     | <sup>2</sup> | 7.68E+02             | <sup>2</sup> | 3.80E-03             | <sup>2</sup> |
| Benzo(b)fluoranthene   | 252.3                       | <sup>2,4</sup> | 2.60E-06                                                | <sup>2</sup> | 5.56E-10                                                  | <sup>2</sup> | 5.74E+00                                                                      | <sup>2</sup> | 5.80E+00                                                              | <sup>2</sup> | 1.75E-04                                   | <sup>2</sup>   | 6.67E-05                     | <sup>2</sup> | 7.54E+02             | <sup>2</sup> | 1.50E-03             | <sup>2</sup> |
| Benzo(g,h,i)perylene   | 276.3                       | <sup>2,4</sup> | 4.10E-06                                                | <sup>4</sup> | 4.90E-10                                                  | <sup>4</sup> | 5.61E+00                                                                      | <sup>2</sup> | 6.50E+00                                                              | <sup>2</sup> | 3.03E-05                                   | <sup>2</sup>   | 2.25E-05                     | <sup>2</sup> | 7.73E+02             | <sup>2</sup> | 2.60E-04             | <sup>2</sup> |
| Benzo(k)fluoranthene   | 252.3                       | <sup>2,4</sup> | 2.60E-06                                                | <sup>2</sup> | 5.56E-10                                                  | <sup>2</sup> | 6.09E+00                                                                      | <sup>2</sup> | 6.00E+00                                                              | <sup>2</sup> | 3.40E-05                                   | <sup>1</sup>   | 4.12E-06                     | <sup>2</sup> | 7.53E+02             | <sup>2</sup> | 8.00E-04             | <sup>2</sup> |
| Chrysene               | 228.3                       | <sup>2,4</sup> | 2.50E-06                                                | <sup>2</sup> | 6.21E-10                                                  | <sup>2</sup> | 3.66E+00                                                                      | <sup>2</sup> | 5.70E+00                                                              | <sup>2</sup> | 2.63E-05                                   | <sup>2</sup>   | 1.07E-04                     | <sup>2</sup> | 7.21E+02             | <sup>2</sup> | 1.60E-03             | <sup>2</sup> |
| Dibenzo(ah)anthracene  | 278.4                       | <sup>2,4</sup> | 2.00E-06                                                | <sup>2</sup> | 5.18E-10                                                  | <sup>2</sup> | 6.58E+00                                                                      | <sup>2</sup> | 6.75E+00                                                              | <sup>2</sup> | 6.03E-07                                   | <sup>1,2</sup> | 9.16E-08                     | <sup>2</sup> | 7.97E+02             | <sup>2</sup> | 6.00E-04             | <sup>2</sup> |
| Fluoranthene           | 202.3                       | <sup>2,4</sup> | 3.00E-06                                                | <sup>2</sup> | 6.35E-10                                                  | <sup>2</sup> | 5.03E+00                                                                      | <sup>2</sup> | 5.22E+00                                                              | <sup>2</sup> | 4.20E-04                                   | <sup>2</sup>   | 8.70E-03                     | <sup>2</sup> | 6.48E+02             | <sup>2</sup> | 2.60E-01             | <sup>2</sup> |
| Fluorene               | 166.2                       | <sup>2,4</sup> | 3.60E-06                                                | <sup>2</sup> | 7.88E-10                                                  | <sup>2</sup> | 4.14E+00                                                                      | <sup>2</sup> | 4.18E+00                                                              | <sup>2</sup> | 3.18E-03                                   | <sup>2</sup>   | 7.20E-01                     | <sup>2</sup> | 5.68E+02             | <sup>2</sup> | 1.90E+00             | <sup>2</sup> |
| Indeno(1-2-3,cd)pyrene | 276.3                       | <sup>2,4</sup> | 1.90E-06                                                | <sup>2</sup> | 5.66E-10                                                  | <sup>2</sup> | 6.54E+00                                                                      | <sup>2</sup> | 6.65E+00                                                              | <sup>2</sup> | 6.56E-05                                   | <sup>1,2</sup> | 1.30E-08                     | <sup>2</sup> | 8.09E+02             | <sup>2</sup> | 2.20E-05             | <sup>2</sup> |
| Naphthalene            | 128.17                      | <sup>2,4</sup> | 5.90E-06                                                | <sup>2</sup> | 7.50E-10                                                  | <sup>2</sup> | 3.11E+00                                                                      | <sup>2</sup> | 3.37E+00                                                              | <sup>2</sup> | 1.74E-02                                   | <sup>2</sup>   | 3.68E+01                     | <sup>2</sup> | 4.91E+02             | <sup>2</sup> | 3.10E+01             | <sup>2</sup> |
| Pyrene                 | 202.3                       | <sup>2,4</sup> | 2.70E-06                                                | <sup>2</sup> | 7.24E-10                                                  | <sup>2</sup> | 5.02E+00                                                                      | <sup>2</sup> | 5.18E+00                                                              | <sup>2</sup> | 3.72E-04                                   | <sup>2</sup>   | 1.19E-02                     | <sup>2</sup> | 6.33E+02             | <sup>2</sup> | 1.30E-01             | <sup>2</sup> |
| <b>TPH</b>             |                             |                |                                                         |              |                                                           |              |                                                                               |              |                                                                       |              |                                            |                |                              |              |                      |              |                      |              |
| EC5-EC6 Aliphatic      | 8.00E+01                    | <sup>3</sup>   | 1.00E-05                                                | <sup>5</sup> | 1.00E-09                                                  | <sup>5</sup> | 2.80E+00                                                                      | <sup>3</sup> | 3.30E+00                                                              | <sup>4</sup> | 3.40E-01                                   | <sup>4</sup>   | 3.54E+04                     | <sup>5</sup> | 3.24E+02             | <sup>5</sup> | 3.60E+01             | <sup>5</sup> |
| EC6-EC8 Aliphatic      | 1.10E+02                    | <sup>3</sup>   | 1.00E-05                                                | <sup>5</sup> | 1.00E-09                                                  | <sup>5</sup> | 3.50E+00                                                                      | <sup>3</sup> | 4.00E+00                                                              | <sup>4</sup> | 5.10E+01                                   | <sup>4</sup>   | 6.36E+03                     | <sup>5</sup> | 3.69E+02             | <sup>5</sup> | 5.40E+00             | <sup>5</sup> |
| EC8-EC10 Aliphatic     | 1.30E+02                    | <sup>3</sup>   | 1.00E-05                                                | <sup>5</sup> | 1.00E-09                                                  | <sup>5</sup> | 4.50E+00                                                                      | <sup>3</sup> | 4.80E+00                                                              | <sup>4</sup> | 8.20E+01                                   | <sup>4</sup>   | 6.38E+02                     | <sup>5</sup> | 4.23E+02             | <sup>5</sup> | 4.30E-01             | <sup>5</sup> |
| EC10-EC12 Aliphatic    | 1.60E+02                    | <sup>3</sup>   | 1.00E-05                                                | <sup>5</sup> | 1.00E-09                                                  | <sup>5</sup> | 5.50E+00                                                                      | <sup>3</sup> | 5.60E+00                                                              | <sup>4</sup> | 1.30E+02                                   | <sup>4</sup>   | 6.40E+01                     | <sup>5</sup> | 4.73E+02             | <sup>5</sup> | 3.40E-02             | <sup>5</sup> |
| EC12-EC16 Aliphatic    | 2.10E+02                    | <sup>3</sup>   | 1.00E-05                                                | <sup>5</sup> | 1.00E-09                                                  | <sup>5</sup> | 6.70E+00                                                                      | <sup>3</sup> | 6.80E+00                                                              | <sup>4</sup> | 5.40E+02                                   | <sup>4</sup>   | 4.90E+00                     | <sup>5</sup> | 5.33E+02             | <sup>5</sup> | 7.60E-04             | <sup>5</sup> |
| EC16-EC35 Aliphatic    | 2.80E+02                    | <sup>3</sup>   | 1.00E-05                                                | <sup>5</sup> | 1.00E-09                                                  | <sup>5</sup> | 8.60E+00                                                                      | <sup>3</sup> | 8.90E+00                                                              | <sup>4</sup> | 6.40E+03                                   | <sup>4</sup>   | 1.00E-01                     | <sup>5</sup> | 5.93E+02             | <sup>5</sup> | 2.50E-06             | <sup>5</sup> |
| EC5-EC7 Aromatic*      | 7.80E+01                    | <sup>3</sup>   | 8.80E-06                                                | <sup>5</sup> | 9.80E-10                                                  | <sup>5</sup> | 1.90E+00                                                                      | <sup>3</sup> | 2.10E+00                                                              | <sup>4</sup> | 2.30E-01                                   | <sup>4</sup>   | 6.40E+03                     | <sup>5</sup> | 3.53E+02             | <sup>5</sup> | 1.77E+03             | <sup>5</sup> |
| EC7-EC8 Aromatic**     | 9.20E+01                    | <sup>3</sup>   | 8.70E-06                                                | <sup>5</sup> | 8.60E-10                                                  | <sup>5</sup> | 2.40E+00                                                                      | <sup>3</sup> | 2.50E+00                                                              | <sup>4</sup> | 2.70E-01                                   | <sup>4</sup>   | 1.78E+03                     | <sup>5</sup> | 3.83E+02             | <sup>5</sup> | 5.35E+02             | <sup>5</sup> |
| EC8-EC10 Aromatic      | 1.20E+02                    | <sup>3</sup>   | 1.00E-05                                                | <sup>5</sup> | 1.00E-09                                                  | <sup>5</sup> | 3.10E+00                                                                      | <sup>3</sup> | 3.10E+00                                                              | <sup>4</sup> | 4.90E-01                                   | <sup>4</sup>   | 6.38E+02                     | <sup>5</sup> | 4.23E+02             | <sup>5</sup> | 6.50E+01             | <sup>5</sup> |
| EC10-EC12 Aromatic     | 1.40E+02                    | <sup>3</sup>   | 1.00E-05                                                | <sup>5</sup> | 1.00E-09                                                  | <sup>5</sup> | 3.50E+00                                                                      | <sup>3</sup> | 3.50E+00                                                              | <sup>4</sup> | 1.40E-01                                   | <sup>4</sup>   | 6.38E+01                     | <sup>5</sup> | 4.73E+02             | <sup>5</sup> | 2.50E+01             | <sup>5</sup> |
| EC12-EC16 Aromatic     | 1.50E+02                    | <sup>3</sup>   | 1.00E-05                                                | <sup>5</sup> | 1.00E-09                                                  | <sup>5</sup> | 3.80E+00                                                                      | <sup>3</sup> | 3.90E+00                                                              | <sup>4</sup> | 5.40E-02                                   | <sup>4</sup>   | 4.90E+00                     | <sup>5</sup> | 5.33E+02             | <sup>5</sup> | 5.80E+00             | <sup>5</sup> |
| EC16-EC21 Aromatic     | 1.80E+02                    | <sup>3</sup>   | 1.00E-05                                                | <sup>5</sup> | 1.00E-09                                                  | <sup>5</sup> | 4.20E+00                                                                      | <sup>3</sup> | 4.70E+00                                                              | <sup>4</sup> | 1.30E-02                                   | <sup>4</sup>   | 1.11E-01                     | <sup>5</sup> | 5.93E+02             | <sup>5</sup> | 6.50E-01             | <sup>5</sup> |
| EC21-EC35 Aromatic     | 2.50E+02                    | <sup>3</sup>   | 1.00E-05                                                | <sup>5</sup> | 1.00E-09                                                  | <sup>5</sup> | 5.10E+00                                                                      | <sup>3</sup> | 6.10E+00                                                              | <sup>4</sup> | 6.80E-04                                   | <sup>4</sup>   | 4.46E-05                     | <sup>5</sup> | 6.13E+02             | <sup>5</sup> | 6.60E-03             | <sup>5</sup> |

<sup>1</sup> USEPA Soil Screening Level Data (1996);

<sup>2</sup> Recommended values for CLEA published in EA Draft Technical Report P5-079/TR1 (Tables 2.4/2.7);

<sup>2a</sup> Recommended values for CLEA published in EA Draft Technical Report P5-079/TR1 (Table 4.3);

<sup>3</sup> TPH Criteria Working Group, Volume 3 (Table 7);

<sup>4</sup> RISC User's Manual; Version 4.0. Table 11-1. Chemical Properties Database;

<sup>5</sup> LQM CIEH, Generic Assessment Criteria for human health risk assessment, 2006, ISBN 0-9547474-3-7;

\* Benzene;

\*\* Toluene.



# Oral Index Dose or TDSI Input Parameters (Polynuclear Aromatic Hydrocarbons and Petroleum Hydrocarbons)

| Determinand            | Threshold or Non-Threshold | ID or TDSI | UK Values       | Other Sources of Available Information |                                                                                                               |                                                                                                                                              |                                                                                                                                                       | UK Equivalent                                                                                                                                         | Input Parameter                                                                                                                                       | Seed Value <sup>6</sup>                                                                                                                               | Justification |
|------------------------|----------------------------|------------|-----------------|----------------------------------------|---------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
|                        |                            |            | Oral TDSI or ID | RIVM <sup>3</sup> CR <sub>oral</sub>   | RIVM <sup>3</sup> TDI                                                                                         | TPH-CWG <sup>4</sup>                                                                                                                         | TEF <sup>5</sup>                                                                                                                                      | 10 <sup>-5</sup>                                                                                                                                      | (mg/kg BW <sup>-1</sup> day <sup>-1</sup> )                                                                                                           | mg/kg                                                                                                                                                 |               |
| PAH                    |                            |            |                 |                                        |                                                                                                               |                                                                                                                                              |                                                                                                                                                       |                                                                                                                                                       |                                                                                                                                                       |                                                                                                                                                       |               |
| Acenaphthene           | 1                          | TDSI       | 2.00E-05        | 5.00E-01                               | 4.00E-02                                                                                                      | 2.00E-04                                                                                                                                     | 5.00E-02                                                                                                                                              | 1.00E-02                                                                                                                                              | 2.9                                                                                                                                                   | TDSI <sub>oral</sub> from RIVM (2001) using converted CR <sub>oral</sub> value. TDSI <sub>oral</sub> assumed to be equal to 20% TDI <sub>oral</sub> . |               |
| Acenaphthylene         | 1                          | TDSI       |                 | 5.00E-02                               |                                                                                                               |                                                                                                                                              |                                                                                                                                                       | 1.00E-03                                                                                                                                              | 0.8                                                                                                                                                   | TDSI <sub>oral</sub> from RIVM (2001) using converted CR <sub>oral</sub> value. TDSI <sub>oral</sub> assumed to be equal to 20% TDI <sub>oral</sub> . |               |
| Anthracene             | 1                          | TDSI       |                 | 8.00E-03                               |                                                                                                               |                                                                                                                                              |                                                                                                                                                       | 5.7                                                                                                                                                   | RIVM (2001) published TDI value adopted for TDI <sub>oral</sub> . TDSI <sub>oral</sub> assumed to be equal to 20% TDI <sub>oral</sub> .               |                                                                                                                                                       |               |
| Benz(a)anthracene      | 2                          | ID         |                 | 2.00E-04                               | 11.2                                                                                                          |                                                                                                                                              |                                                                                                                                                       | ID <sub>oral</sub> determined relative to UK Health Criteria Values for BaP using Toxic Equivalency Factors. Relative potency factor is 0.1.          |                                                                                                                                                       |                                                                                                                                                       |               |
| Benzo(a)pyrene         | 2                          | ID         |                 | 2.00E-04                               | 2.00E-05                                                                                                      | n/a                                                                                                                                          |                                                                                                                                                       | DEFRA and EA published values in Tox2.                                                                                                                |                                                                                                                                                       |                                                                                                                                                       |               |
| Benzo(b)fluoranthene   | 2                          | ID         |                 |                                        | 2.00E-04                                                                                                      | 9.9                                                                                                                                          |                                                                                                                                                       | ID <sub>oral</sub> determined relative to UK Health Criteria Values for BaP using Toxic Equivalency Factors. Relative potency factor is 0.1.          |                                                                                                                                                       |                                                                                                                                                       |               |
| Benzo(g,h,i)perylene   | 1                          | TDSI       |                 |                                        | 3.00E-03                                                                                                      | 6.00E-04                                                                                                                                     |                                                                                                                                                       | 4.7                                                                                                                                                   | TDSI <sub>oral</sub> from RIVM (2001) using converted CR <sub>oral</sub> value. TDSI <sub>oral</sub> assumed to be equal to 20% TDI <sub>oral</sub> . |                                                                                                                                                       |               |
| Benzo(k)fluoranthene   | 2                          | ID         |                 | 2.00E-04                               | 3.6                                                                                                           | ID <sub>oral</sub> determined relative to UK Health Criteria Values for BaP using Toxic Equivalency Factors. Relative potency factor is 0.1. |                                                                                                                                                       |                                                                                                                                                       |                                                                                                                                                       |                                                                                                                                                       |               |
| Chrysene               | 2                          | ID         |                 | 2.00E-04                               | 9.8                                                                                                           | ID <sub>oral</sub> determined relative to UK Health Criteria Values for BaP using Toxic Equivalency Factors. Relative potency factor is 0.1. |                                                                                                                                                       |                                                                                                                                                       |                                                                                                                                                       |                                                                                                                                                       |               |
| Dibenzo(ah)anthracene  | 2                          | ID         |                 | 2.00E-05                               | 2.6                                                                                                           | ID <sub>oral</sub> determined relative to UK Health Criteria Values for BaP using Toxic Equivalency Factors. Relative potency factor is 0.1. |                                                                                                                                                       |                                                                                                                                                       |                                                                                                                                                       |                                                                                                                                                       |               |
| Fluoranthene           | 1                          | TDSI       | 5.00E-02        | 4.00E-02                               | 5.00E-03                                                                                                      | 1.00E-03                                                                                                                                     | 22.9                                                                                                                                                  | TDSI <sub>oral</sub> from RIVM (2001) using converted CR <sub>oral</sub> value. TDSI <sub>oral</sub> assumed to be equal to 20% TDI <sub>oral</sub> . |                                                                                                                                                       |                                                                                                                                                       |               |
| Fluorene               | 1                          | TDSI       | 8.00E-03        |                                        |                                                                                                               | 2.7                                                                                                                                          | RIVM (2001) published TDI value adopted for TDI <sub>oral</sub> . TDSI <sub>oral</sub> assumed to be equal to 20% TDI <sub>oral</sub> .               |                                                                                                                                                       |                                                                                                                                                       |                                                                                                                                                       |               |
| Indeno(1-2-3,cd)pyrene | 2                          | ID         | 2.00E-04        |                                        |                                                                                                               | 4.9                                                                                                                                          | ID <sub>oral</sub> determined relative to UK Health Criteria Values for BaP using Toxic Equivalency Factors. Relative potency factor is 0.1.          |                                                                                                                                                       |                                                                                                                                                       |                                                                                                                                                       |               |
| Naphthalene            | 1                          | TDSI       | 2.00E-02        |                                        |                                                                                                               | n/a                                                                                                                                          | DEFRA and EA published values in Tox20.                                                                                                               |                                                                                                                                                       |                                                                                                                                                       |                                                                                                                                                       |               |
| Phenanthrene           | 1                          | TDSI       | 4.00E-02        | 5.00E-01                               | 5.00E-02                                                                                                      | 8.00E-03                                                                                                                                     | 14.1                                                                                                                                                  | TDSI <sub>oral</sub> from RIVM (2001) using converted CR <sub>oral</sub> value. TDSI <sub>oral</sub> assumed to be equal to 20% TDI <sub>oral</sub> . |                                                                                                                                                       |                                                                                                                                                       |               |
| Pyrene                 | 1                          | TDSI       | 1.00E-02        |                                        |                                                                                                               | 18.8                                                                                                                                         | TDSI <sub>oral</sub> from RIVM (2001) using converted CR <sub>oral</sub> value. TDSI <sub>oral</sub> assumed to be equal to 20% TDI <sub>oral</sub> . |                                                                                                                                                       |                                                                                                                                                       |                                                                                                                                                       |               |
| TPH                    |                            |            |                 |                                        |                                                                                                               |                                                                                                                                              |                                                                                                                                                       |                                                                                                                                                       |                                                                                                                                                       |                                                                                                                                                       |               |
| EC5-EC6 Aliphatic      | 1                          | TDSI       |                 |                                        |                                                                                                               | 5.00E+00                                                                                                                                     |                                                                                                                                                       | 1.00E+00                                                                                                                                              | 0.3                                                                                                                                                   | Fraction specific oral Rfd. TDSI <sub>oral</sub> assumed to be equal to 20% TDI <sub>oral</sub> .                                                     |               |
| EC6-EC8 Aliphatic      | 1                          | TDSI       |                 |                                        |                                                                                                               |                                                                                                                                              |                                                                                                                                                       | 5.00E+00                                                                                                                                              | 5.3                                                                                                                                                   | Fraction specific oral Rfd. TDSI <sub>oral</sub> assumed to be equal to 20% TDI <sub>oral</sub> .                                                     |               |
| EC8-EC10 Aliphatic     | 1                          | TDSI       |                 |                                        |                                                                                                               |                                                                                                                                              |                                                                                                                                                       | 1.00E-01                                                                                                                                              | 9.2                                                                                                                                                   | Fraction specific oral Rfd. TDSI <sub>oral</sub> assumed to be equal to 20% TDI <sub>oral</sub> .                                                     |               |
| EC10-EC12 Aliphatic    | 1                          | TDSI       |                 |                                        |                                                                                                               |                                                                                                                                              |                                                                                                                                                       | 1.00E-01                                                                                                                                              | 14.1                                                                                                                                                  | Fraction specific oral Rfd. TDSI <sub>oral</sub> assumed to be equal to 20% TDI <sub>oral</sub> .                                                     |               |
| EC12-EC16 Aliphatic    | 1                          | TDSI       |                 |                                        |                                                                                                               |                                                                                                                                              |                                                                                                                                                       | 1.00E-01                                                                                                                                              | 144.5                                                                                                                                                 | Fraction specific oral Rfd. TDSI <sub>oral</sub> assumed to be equal to 20% TDI <sub>oral</sub> .                                                     |               |
| EC16-EC35 Aliphatic    | 1                          | TDSI       |                 |                                        |                                                                                                               |                                                                                                                                              |                                                                                                                                                       | 2.00E+00                                                                                                                                              | 120.1                                                                                                                                                 | Fraction specific oral Rfd. TDSI <sub>oral</sub> assumed to be equal to 20% TDI <sub>oral</sub> .                                                     |               |
| EC21-EC35 Aliphatic    | 1                          | TDSI       |                 |                                        |                                                                                                               |                                                                                                                                              |                                                                                                                                                       | 2.00E+00                                                                                                                                              | 134                                                                                                                                                   | Fraction specific oral Rfd. TDSI <sub>oral</sub> assumed to be equal to 20% TDI <sub>oral</sub> .                                                     |               |
| EC5-EC7 Aromatic*      | 1                          | TDSI       |                 |                                        |                                                                                                               |                                                                                                                                              |                                                                                                                                                       | 2.00E-01                                                                                                                                              | 3.3                                                                                                                                                   | DEFRA and EA published values in Tox11. TDSI <sub>oral</sub> assumed to be equal to 20% TDI <sub>oral</sub> .                                         |               |
| EC7-EC8 Aromatic**     | 1                          | TDSI       | 2.00E-01        | 12                                     | DEFRA and EA published values in Tox14. TDSI <sub>oral</sub> assumed to be equal to 20% TDI <sub>oral</sub> . |                                                                                                                                              |                                                                                                                                                       |                                                                                                                                                       |                                                                                                                                                       |                                                                                                                                                       |               |
| EC8-EC10 Aromatic      | 1                          | TDSI       | 4.00E-02        | 4.00E-02                               | 8.00E-03                                                                                                      | 8.00E-03                                                                                                                                     | 30.3                                                                                                                                                  | Fraction specific oral Rfd. TDSI <sub>oral</sub> assumed to be equal to 20% TDI <sub>oral</sub> .                                                     |                                                                                                                                                       |                                                                                                                                                       |               |
| EC10-EC12 Aromatic     | 1                          | TDSI       | 8.00E-03        |                                        |                                                                                                               | 20.7                                                                                                                                         | Fraction specific oral Rfd. TDSI <sub>oral</sub> assumed to be equal to 20% TDI <sub>oral</sub> .                                                     |                                                                                                                                                       |                                                                                                                                                       |                                                                                                                                                       |               |
| EC12-EC16 Aromatic     | 1                          | TDSI       | 8.00E-03        |                                        |                                                                                                               | 85.9                                                                                                                                         | Fraction specific oral Rfd. TDSI <sub>oral</sub> assumed to be equal to 20% TDI <sub>oral</sub> .                                                     |                                                                                                                                                       |                                                                                                                                                       |                                                                                                                                                       |               |
| EC16-EC21 Aromatic     | 1                          | TDSI       | 6.00E-03        |                                        |                                                                                                               | 278.1                                                                                                                                        | Fraction specific oral Rfd. TDSI <sub>oral</sub> assumed to be equal to 20% TDI <sub>oral</sub> .                                                     |                                                                                                                                                       |                                                                                                                                                       |                                                                                                                                                       |               |
| EC21-EC35 Aromatic     | 1                          | TDSI       | 6.00E-03        |                                        |                                                                                                               | 532.6                                                                                                                                        | Fraction specific oral Rfd. TDSI <sub>oral</sub> assumed to be equal to 20% TDI <sub>oral</sub> . Based on Pyrene C <sub>16</sub> value.              |                                                                                                                                                       |                                                                                                                                                       |                                                                                                                                                       |               |

<sup>1</sup> Threshold contaminant and therefore a **Tolerable Daily Soil Intake** (TDSI) should be used;

<sup>2</sup> Non threshold contaminant (i.e. carcinogenic) and therefore an **Index Dose** (ID) should be used (a dose that represents a minimal risk level). EA(2003) Principles for Evaluating the Human Health Risks from Petroleum Hydrocarbons in Soils: R&D Technical Report P5-080/TR1;

<sup>3</sup> RIVM Report 711701 023, Technical Evaluation of the Intervention Values for Soil/sediment and Groundwater, February 2001;

<sup>4</sup> TPH Criteria Working Group, Development of Fraction Specific Reference Doses and Reference Concentrations for Total Petroleum Hydrocarbons, Volume 4 (Table 1);

<sup>5</sup> USEPA 1993 Provisional Guidance for QRA of PAH. EPA/600/R-93/089;

<sup>6</sup> Seed Value ('Background') calculated from review of site specific soil laboratory data for greenfield and brownfield sites investigated by Abatech International Ltd;

\* Benzene;

\*\* Toluene.