

Tetrosyl Ltd, Bury

## Remediation Strategy

**Job Number:** LKC231650

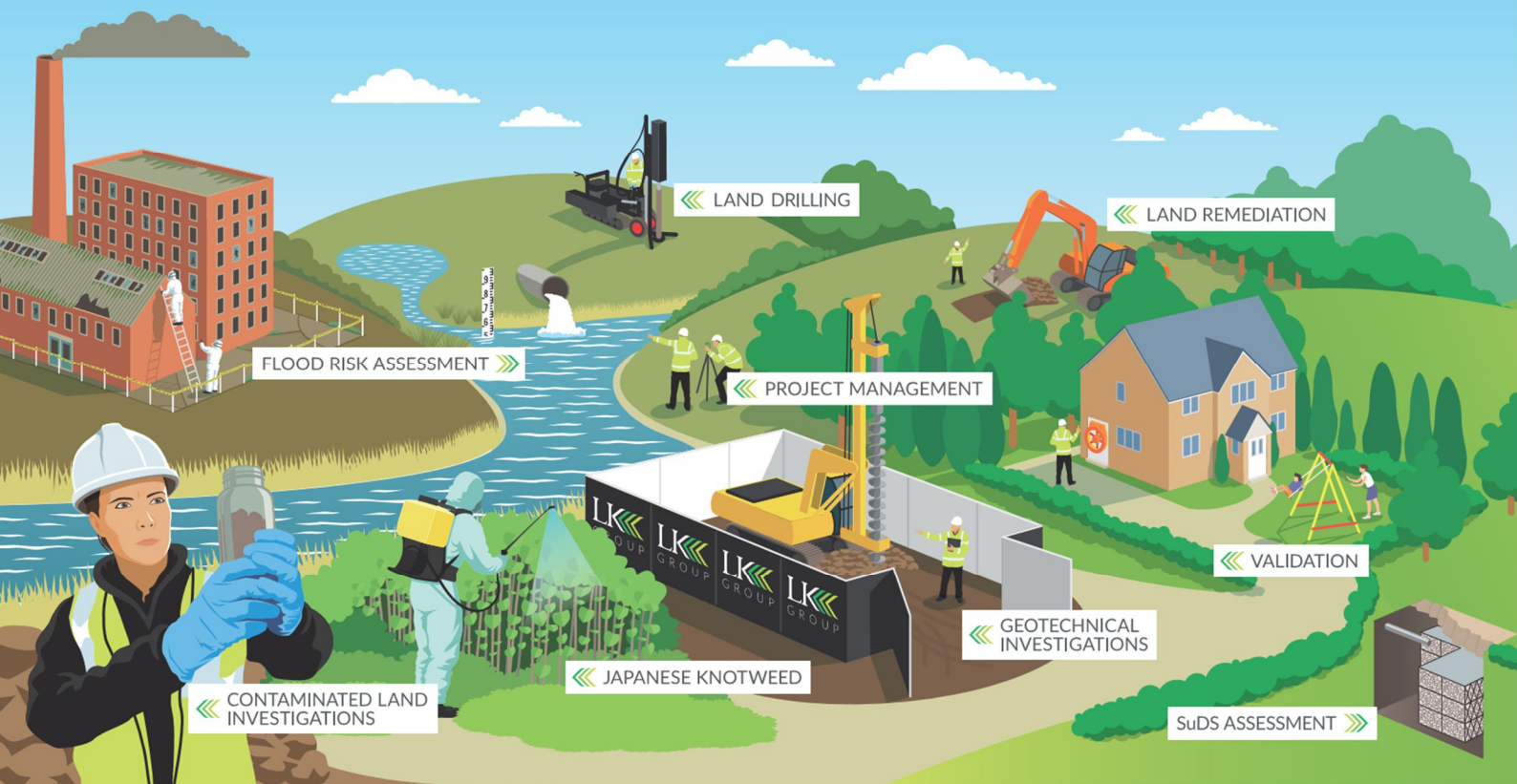
**Date:** January 2025r

**Client:** Tetrosyl Group Ltd



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## DOCUMENT QUALITY ASSURANCE

|                     |                                                               |
|---------------------|---------------------------------------------------------------|
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| <b>Report Title</b> | Remediation Strategy                                          |
| <b>Job Number</b>   | LKC231650                                                     |
| <b>Client</b>       | Tetrosyl Group Ltd                                            |

|                      |                       |                      |                               |
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## 1. Introduction

### 1.1. Background

LK Consult Ltd (LKC) has been commissioned to carry out a Remediation Strategy for Tetrosyl Ltd, Bury in support of a planning application to develop the site for commercial use.

The following work has previously been undertaken:

- Factual Report for Site Investigation, undertaken by Dunelm Geotechnical and Environmental (Ref: M1203, dated 24<sup>th</sup> May 2023).
- Preliminary Risk Assessment (PRA) report, undertaken by LKC (Ref: LKC 23 1650, dated 09-01-24).
- Coal Mining Risk Assessment (CMRA) report, undertaken by LKC (Ref: LKC 23 1650, dated 12-01-24).
- Phase 2 Geo-Environmental Investigation, Risk Assessment and Outline Remediation Strategy report, undertaken by LKC (Ref: LKC 23 1650 -B1-GI-Tetrosyl R0, dated 13/02/2024).

The Remediation Strategy is required to determine the work necessary in order to ensure the site is “suitable for use” for the proposed development with regards to potential contaminated land pollutant linkages.

A summary of the site details is presented in Table 1-1. The site location and proposed development are included in Appendix A.

|                      |                                                     |
|----------------------|-----------------------------------------------------|
| Site Location        | Tetrosyl Group, Bridge Hall Lane, Bury, BL9 7NZ     |
| Approximate Area     | Centred at National Grid Reference 382870E 410870N. |
| Topography           | 4,300m <sup>2</sup> .                               |
| Current Site Use     | 86-90 metres above ordnance datum (AOD).            |
| Proposed Development | Site has a moderate slope down to the southwest.    |

Table 1-1: Summary of Site Details.

This report will provide more detail on the required build phase validation work as per guidelines set out in Land Contamination Risk Management (LCRM) Stage 3 remediation and Verification<sup>1</sup>.

### 1.2. Summary of Previous Findings

Table 1-2 summarises the site details, historical review, environmental settings and site reconnaissance from the PRA.

|                             |                                                                                                                                                                                                                                                                                               |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Main Historical Features    | Onsite: Mill Buildings, Electrical Substation, Road.<br>Surrounding Area: Bridge Hall Paper Mill, Tetrosyl Works, Reservoir, Filter Beds, Electrical Substation                                                                                                                               |
| Geology / Hydrogeology      | Artificial: No BGS recorded artificial.<br>Superficial Alluvium (Clay, Silt, Sand and Gravel) Secondary undifferentiated aquifer. Diamicton Till, Secondary A Aquifer.<br>Bedrock: Lower Coal Measures. Secondary A Aquifer.                                                                  |
| Landfills / Infilled ground | 3no. Landfills <ul style="list-style-type: none"> <li>Prettywood Sand Quarry (79m E) &amp; West Extension Landfill Site (79m E)</li> <li>Bury New Road (135m E)</li> </ul> 2no. Infilled land (non-water and water) <ul style="list-style-type: none"> <li>40m NW</li> <li>41m NW.</li> </ul> |
| Site walkover               | Manholes and service entries identified in proximity to road.                                                                                                                                                                                                                                 |

Table 1-2: Summary of site details, historical review, environmental settings and site reconnaissance.

The PRA identified a moderate/low to moderate risk for the identified pollutant linkages and site investigation was recommended. A site investigation was undertaken and comprised:

- 5no. trial pits mechanically excavated to 2.80-3.30mbgl (ref. TP101 to TP105).
- 4no. cable percussion boreholes drilled to 5.80-6.70mbgl (ref. CP101 to CP104) through the area of the trial pits.
- 3no. rotary boreholes drilled to 40mbgl in areas not covered by prior investigation.

All site investigation locations are shown in Figure 3. Ground conditions are summarised in Table 1-3 below.

|              |                                                                                                                                                                              |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Made Ground  | Made ground was recorded from 0.00mbgl to 7.200mbgl, except from anthropogenic material encountered, no further contamination identified.                                    |
| Superficial  | Superficial comprised light brown gravelly clay was located in 2no. boreholes ref: (RH102A & RH103A) between 4.50mbgl to 6.20mbgl.                                           |
| Bedrock      | Bedrock was encountered at depths of 5.20mbgl to 7.20mbgl comprising light grey mudstone. Rotary boreholes were drilled to 40.00mbgl.                                        |
| Groundwater  | No groundwater encountered within ref: (CP101-CP104, TP101-TP105 & RH101-RH103).                                                                                             |
| Obstructions | Obstructions located in TP101-TP104 consisting of boulder sized concrete. Concrete slab was observed within CP102 to CP104, chiselled for 2.5-3.5 hours to advance borehole. |

Table 1-3: Summary of Ground Conditions.

With the exception of the anthropogenic material encountered in the made ground, no further evidence of contamination was identified.

Laboratory testing indicated no soil concentrations of contaminants were above assessment criteria (commercial land use). Asbestos fibres were identified in three locations. The conceptual model was updated following completion of the risk assessment. A summary of the risk assessment is included in Table 1-4.

| PL | Contaminant                                                                                                                                                  | Risk           | Recommendations                                                                       |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------------------------------------------------------------------------------------|
| 1  | Asbestos, heavy metals, sulphates, PAHs, petroleum hydrocarbons, other organic / inorganic contaminants (made ground, paper mill)                            | –              | Development area is entirely hardstood therefore no pathway. No remediation required. |
| 2  | Petroleum hydrocarbons, naphthalene (made ground, paper mill, works, tanks, surrounding industrial use)                                                      | Moderate / Low | No remediation required.                                                              |
| 3  | Hazardous / ground gas: methane, carbon dioxide (landfills/offsite potentially infilled features within 250m, deep made ground, Pennine Lower Coal Measures) | Moderate / Low | No remediation required.                                                              |
| 4  | Chlorinated organic solvents, PAHs, metals, petroleum hydrocarbons (made ground, paper mill, works, tanks, surrounding industrial use)                       | Moderate / Low | No remediation required.                                                              |
| 5  | Petroleum hydrocarbons, naphthalene (made ground, paper mill, works, tanks)                                                                                  | –              | No potable water pipeline proposed. No remediation required.                          |

Table 1-4: Summary Risk Table.

Based on the findings of the site investigation and risk assessment, no specific remediation was considered necessary and a general ‘watching brief’ for unexpected contamination was recommended.

## 2. Remediation Strategy

### 2.1. Aims and Objectives

---

LKC consider that no specific remediation works are required and a watching brief for the presence of unexpected contamination is sufficient. This will form part of the general earthworks and 'pre-construction' (or enabling works) phase. No remediation is anticipated for the 'build phase' (i.e. during the construction works) phase.

The recommendations provided below are considered appropriate for the site based on the site investigation work undertaken. LKC consider that adequate information has been presented and do not deem further investigation works necessary.

LKC should stress that no remediation, enabling works or designing works should take place until Regulatory approval has been obtained.

### 2.2. General Site-Wide Remediation Works

---

#### 2.2.1. *Watching Brief for Unexpected Contamination*

A watching brief will be maintained for evidence of previously unidentified contamination earthworks and development works. If evidence of contamination is identified, then works in the area will stop and LKC and the Local Authority informed.

If any unexpected contamination is encountered, LKC shall undertake further delineation works, and this may include collection of appropriate samples for laboratory analysis to further characterise the material and allow a risk assessment to be undertaken or removal of the impacted material to quarantine.

Soil samples will be taken and analysed for a suite of contaminants representative of the impacted material. To determine that significantly impacted soils have been removed, LKC shall collect verification samples from the base and sides of the excavation.

Quarantined material may be removed offsite to a licensed treatment facility, or an assessment made of its potential for treatment and / or retention on site.

#### 2.2.2. *Asbestos in Soils Management*

Due to the presence of asbestos containing material, it is recommended that additional precautions are taken during site clearance, earthworks and construction in the area of concern. The presence of asbestos in the made ground at the site presents a potential risk of generation of airborne fibres if this material is disturbed, such as for excavations to construct new foundations.

This risk can be managed by careful procedures and site monitoring to reduce the risk of airborne fibres, and it is recommended that an appropriate 'Asbestos Management Strategy' is developed and adopted for all intrusive ground works which disturb the made ground in the area of concern. This should be carried out in line with CIRIA C733<sup>2</sup>.

This may include asbestos awareness training for all site staff, provision of suitable personal and respiratory protective equipment and air monitoring.

With regards to cement bound asbestos, this can be handpicked, doubled bagged and disposed of appropriately to a licenced landfill. Guidance on removing asbestos cement is described in HSE (2012)<sup>3</sup>.

If ACM is identified in soil arisings then soil should be placed directly into covered skips and disposed of at a suitable licenced landfill, after further testing to quantify the extent of asbestos contamination of the soils. It should be considered that blue asbestos is notifiable and must be removed by a licenced contractor.

### *2.2.3. Segregation & Removal of Unsuitable Material*

There is potential for some unidentified geotechnically or chemically unsuitable material to be encountered during enabling works.

Such materials will undergo appropriate investigation and testing to ascertain their suitability for re-use, if feasible. Should material be considered either chemically or geotechnically unsuitable then this material will be removed from site under the protocols described in the following sections.

### *2.2.4. Materials Management*

To ensure material is compliant with appropriate waste regulations, any site won material re-used onsite should be in recourse to appropriate exemptions. A U1 and T5 exemption should be registered.

This will allow the following to be used onsite or brought in for use onsite (refer to guidance for types of waste that can be used):

- 5,000 tonnes (c. 3,500m<sup>3</sup>) treatment of crushed concrete/stone.
- 1,000 tonnes (c. 750m<sup>3</sup>) use of non-hazardous soil.
- 5,000 tonnes (c. 3,500m<sup>3</sup>) use of clays, sand, gravel, brick, concrete, stone etc.
- 50,000 tonnes (c. 33,000m<sup>3</sup>) use of bituminous material to be used in roadways.

A Materials Management Plan (MMP) with recourse to the CL:AIRE Code of Practice may be required if volumes exceed exemption limits. This must be registered before material movement starts onsite.

If an MMP is required, this needs to be registered by a Qualified Person (QP) and there must be 'certainty of use' for any material re-used onsite or exported to site to ensure there is no 'sham recovery'.

### *2.2.5. Construction Activity & Inspection*

The following activities and inspections should be incorporated into the site works:

- Due to the variability of the soils at the site it is recommended that sufficient allowance is made for the inspection of formation and sub formations to foundations and pavement construction.
- Excavations where access is required should be subject to a risk assessment from a competent person and where appropriate mitigation measures such as benching back the sides or use of support systems in accordance with CIRIA R97<sup>4</sup> utilised.

- Where access to confined spaces is required appropriate mitigation measures should be addressed within the Construction Stage Health and Safety Plan

#### *2.2.6. Control of Water*

It is considered that significant de-watering is unlikely to be required across the majority of the site. However, where significant organic contamination is present, or in order to chase out deeper obstructions some localised excavation below the groundwater table may be required. Where relict structures are found to retain fluid contaminants, they should be drained first.

Arrangements should be made to prevent ponding in shallow excavations; the Contractor should ensure that ground levels are of sufficient gradient to enable the collection of surface water run-off in sumps or grips. Pumping from over-excavated sumps may be required to maintain satisfactory working conditions.

Contingency arrangements to remove groundwater (including contamination groundwater if encountered) from excavations should be allowed.

Small volumes of pumped fluids/ groundwater should be stored in appropriate, sealed tanks/containers and analysed for a range of determinants prior to disposal to suitable facility.

#### *2.2.7. Stockpile Management*

Stockpiled material should be suitably managed. The source of each stockpile should be recorded and appropriate validation testing for the proposed re-use or potential offsite disposal should be undertaken as required. Depending on the nature of the material the potential for dust generation will be mitigated by dampening down and covering as required.

Material should be segregated by type and source. For example, construction / demolition arisings, site won subsoil, etc.

A quarantine area for suspect contaminated soils should be established on site. This should comprise an impermeable lined area with a small bund to prevent run off and to minimise the risk of contaminating other areas of the site. The material should also be covered to minimise the generation of vapours, fibres, dust and possible nuisance to adjacent receptors, and to prevent rainwater ingress which may mobilise soluble contaminants as required.

#### *2.2.8. Disposal*

Material required to be removed from site should be undertaken under an appropriate duty of care and the results of chemical analysis should be provided to a licensed landfill for confirmation of waste classification.

### 3. Verification Plan

The Remediation Strategy as outlined above should be carried out in accordance with a Verification Plan. Land Contamination Risk Management (LCRM)<sup>5</sup> states.

*“You will need to produce a verification plan. This will be a part of the remediation strategy. It will need to set out all of the data requirements, including compliance criteria and monitoring details. This will establish a ‘lines of evidence’ approach which will verify remediation is working or has worked.”*

#### 3.1. Pre-construction Verification

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The findings of a watching brief should be provided for inclusion within a completion report. This should include any additional testing and assessment for unexpected contamination, disposal and stockpile management.

Waste records such as disposal tickets and waste carrier licences should be provided in the Site Completion Report. Photographic evidence of removal and waste removal tickets should be retained and included in the Site Completion Report.

#### 3.2. Material Selection & Compliance Testing

---

It is not envisaged that any material is imported to site as part of the proposals. However, site generated and/ or imported material should meet the following criteria to be considered suitable for use, depending on the specific requirements of the structural engineer and overall design team.

##### 3.2.1. General Classification

Materials shall be classified in general accordance with the criteria in Tables 6/1 and 6/2 in Series 600 of the Specification for Highway Works, including in Appendix B. Materials shall fall into one or other of the following general classifications:

- i. Acceptable material: natural excavated material from site or imported to site or artificial materials processed through standard engineering means, which meet the requirements of Table 6/1 and Table 6/2 for acceptability for use in the earthworks. The maximum particle size shall be 125mm, measured in any direction;
- ii. Unacceptable material, Class U1 or U2 as defined in clause 2.2 below, shall not be used for the earthworks.

The Contractor is responsible for classifying all acceptable material types to be incorporated into the earthworks to the approval of the engineer in terms of physical and chemical parameters (contamination). Should any additional material be proposed to be imported to site to complete these works, it must first be approved prior to importation.

##### 3.2.2. Compliance Testing

Testing shall be carried out to demonstrate compliance with the requirements of this Specification. Any material not in compliance shall be removed by the Contractor and replaced with compliant material.

The contractor shall undertake testing and keep records to include distinguishable information regarding the location, depth, etc. of each sample tested and reported.

Tests undertaken at off-site laboratories must be reported as soon as practicable. Where the Specification (including British Standards) allows for the provision of test certificates, the Contractor shall in each case submit to the Employer's Representative/Engineer such test certificates unless otherwise described in the Contract.

No single compliance test shall be deemed acceptable if it does not meet the acceptance criteria outlined in Section 3 of this Specification.

Tests that fail or fall outside the acceptable limits should be immediately brought to the attention of the Employer's Representative/Engineer.

The area of placed fill layer represented by the test shall be recorded as non-compliant and remedial action undertaken, such that the remediated material yields a compliant result when subsequently tested.

### *3.2.3. Unacceptable Material*

Fill materials should not be used which would, either in themselves or in combination with other materials or groundwater, give rise to a health hazard, damage to building structures or instability in the filling, including material that is:

- Frozen or containing ice.
- Organic.
- Contaminated or noxious.
- Susceptible to spontaneous combustion.
- Likely to erode or decay and cause voids.
- With excessive moisture content, slurry, mud or from marshes or bogs.
- Clay of liquid limit exceeding 80 and/or plasticity index exceeding 55.
- Unacceptable, class U1 or U2 as defined in the 'Specification for highway works', clause 601.

Unacceptable material Class U1 shall be material, which does not comply with the permitted constituents and material properties of Table 6/1 for acceptable material including:

- i. Material from swamps, marshes, bogs, including: peat, logs, stumps, topsoil and any putrescible material;
- ii. Material susceptible to combustion;
- iii. Material in a frozen condition;
- iv. Material with particle size greater than 125mm; in any direction;
- v. Clay of liquid limit exceeding 90% and/or plasticity indices exceeding 65%, as determined in accordance with BS 1377:Part 2:1990;

- vi. Demolition material or rubble that has not been suitably processed to meet the grading limits and material specifications required (including steel reinforcement, timber, plastic, etc.).

Unacceptable material Class U2 shall be contaminated material that is considered to present a risk to human health or to the environment.

### 3.3. Testing Requirements

#### 3.3.1. General Classification

Testing requirements should be in general accordance with the criteria in Tables 6/1 and 6/2 in Series 600 of the Specification for Highway Works, including in Appendix B, depending on material type.

A minimum of three samples per material type shall be tested by a UKAS accredited laboratory. Testing results shall be provided to the Employer's Representative/Engineer a minimum of 15 days before start of filling.

#### 3.3.2. Contamination Classification

Although no import of material or soft landscaping is envisaged, should any be required, a summary of the chemical testing requirements for imported material is presented in Table 3-1 and is based on the YALPAG guidance (2021)<sup>6</sup>.

| Material Type            | Source                                               | Suite of Analysis | Sampling Rate                                                                                           |
|--------------------------|------------------------------------------------------|-------------------|---------------------------------------------------------------------------------------------------------|
| Virgin Quarried Material | First generation quarried material (stone / subsoil) | Suite A           | 1 or 2 depending upon the type of stone / subsoil utilised to confirm the inert nature of the material. |
| General Fill             | Imported fill – Greenfield / manufactured            | Suite A*          | 1 sample per 500m <sup>3</sup>                                                                          |
|                          | Imported fill - Brownfield                           | Suite B*          |                                                                                                         |
| Topsoil / Subsoil        | Greenfield / manufactured / natural site-won soil    | Suite A*          | 1 sample per 50m <sup>3</sup>                                                                           |
|                          | Brownfield / Screened Soils / site won made ground   | Suite B**         | 1 sample per 50m <sup>3</sup>                                                                           |
|                          | Greenfield / manufactured /                          | Suite C           | 1 composite sample per 5,000m <sup>3</sup>                                                              |

Table 3-1: Sampling Requirements for Imported and Site Won Soils.

**Notes:**

**Suite A** - Heavy metals, pH, water soluble sulphate, speciated PAH, soil organic matter and asbestos screen.

**Suite B** - Heavy metals, pH, water soluble sulphate, speciated PAH, phenol, total and free cyanide, soil organic matter, asbestos screen, banded petroleum hydrocarbons (TPH CWG), BTEX, MTBE.

**Suite C** - BS 3882& BS8601 testing suites.

\*Minimum sampling rate of 3 samples per source.

\*\*Minimum sampling rate of 6 samples per source.

With regards to the soil suitability assessment the following hierarchy shall be used:

- Category 4 Screening Levels (C4SLs) <sup>7, 8</sup>.
- LQM Suitable 4 Use Levels (S4ULs) <sup>9, 10, 11, 12</sup>.

All criteria have been generated using the CLEA V1.06 model<sup>13</sup> based either on 1%, 2.5% and 6% Soil Organic matter (SOM). Results will be compared to the nearest appropriate SOM.

The proposed development is for commercial land-use. Whilst chemically suitable, commercial land use Generic Assessment Criteria values are considered unsuitable for imported material. The testing results for imported soils should be compared to POS(park) assessment criteria for determination of chemical suitability.

Target criteria are presented in Appendix C.

#### 4. Records

All testing and validation work should be documented in a Site Completion Report to include, as a minimum:

- Findings of a watching brief.
- Photographic records of works, including testing, undertaken.
- Copies of waste transfer notes/ import records
- Details of testing results, including laboratory certificates.
- Plans/ figures including surveys is necessary showing location, depth and type of testing undertaken.
- Interpretation of suitability of materials.

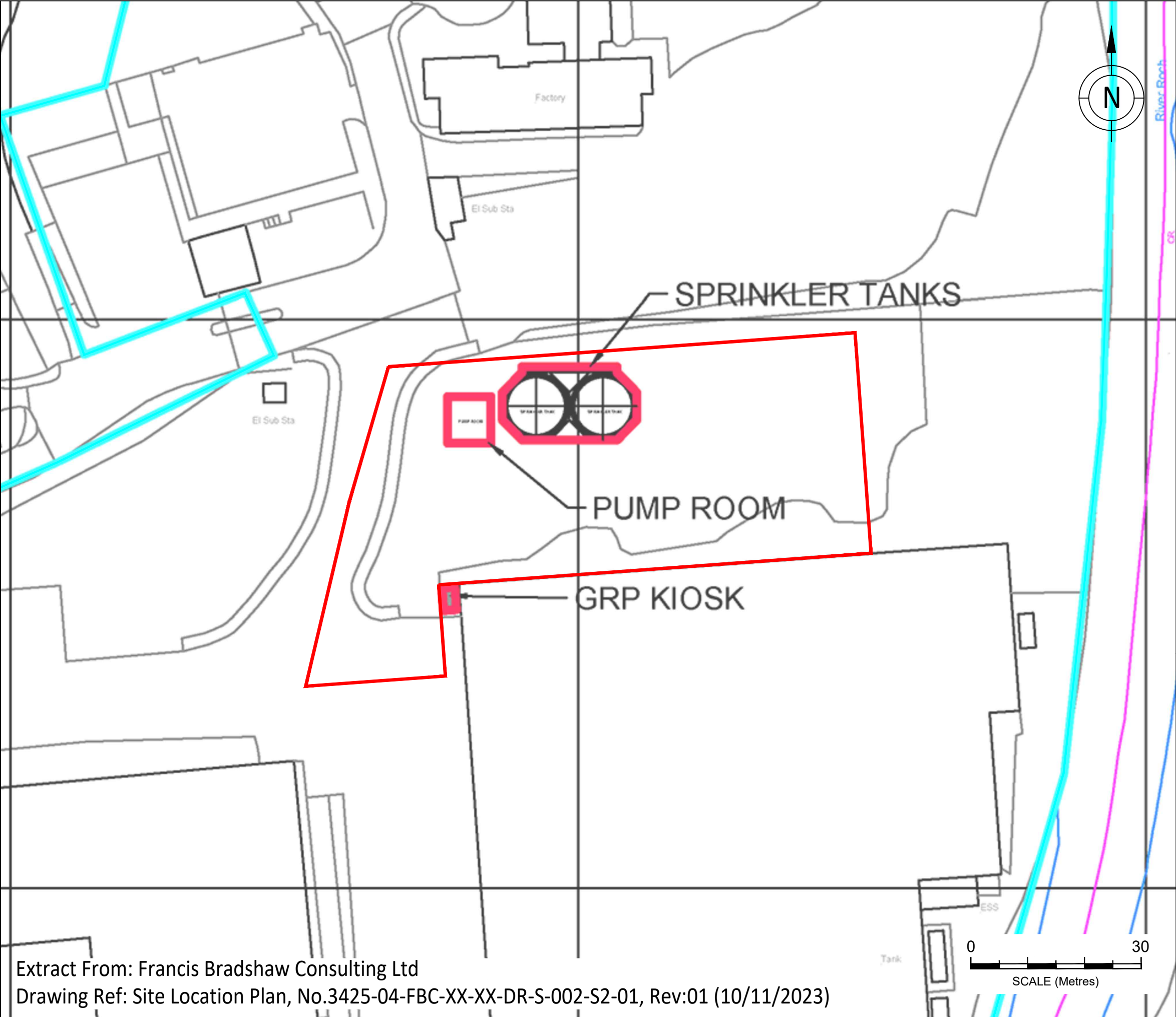
The client shall retain on record all test results and advise the Contractor of any materials or areas of earthworks that are not satisfactory or do not comply with the performance criteria required.

Once all the validation work has been completed and documented to the satisfaction of the Regulators the contaminated land conditions should be able to be discharged and the site considered 'suitable for use'.

## Appendix A - Drawings



|                                       |                 |                   |                    |                                                     |           |                                                                                       |
|---------------------------------------|-----------------|-------------------|--------------------|-----------------------------------------------------|-----------|---------------------------------------------------------------------------------------|
| Client:<br><br>Tetrosyl Group Ltd     |                 |                   |                    | Title:<br><br>Site Location &<br>Boundary Plan      |           |  |
| Site:<br><br>Tetrosyl Group Ltd. Bury |                 |                   |                    | Scale (see scale bar):<br>1:25,000 &<br>1:1000 @ A4 |           |                                                                                       |
| Job No.:<br>LKC 23 1650               | Drawn By:<br>CD | Checked By:<br>CW | Drawn:<br>Dec 2023 | Figure:<br><br>1                                    | Revision: |                                                                                       |



**KEY**

Site Boundary

Ownership Boundary

Sampling Locations and features annotated by LK Consult Ltd are approximate and are based upon observed measurements unless otherwise stated. Do not scale from this drawing and work from marked dimensions only. All dimensions and features should be confirmed on site by the Contractor. Where this drawing includes information provided to LK Consult Ltd by others, LK Consult Ltd gives no warranty, representation or assurance as to the accuracy of such information.

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Client:

Tetrosyl Group Ltd

Site:

Tetrosyl Group Ltd, Bury

Title:

Proposed Development Plan

Job No.:

LKC 23 1650

Scale (See Scale Bar):

See Scale Bar

Figure:

2

Revision:

Drawn By:

AC

Checked By:

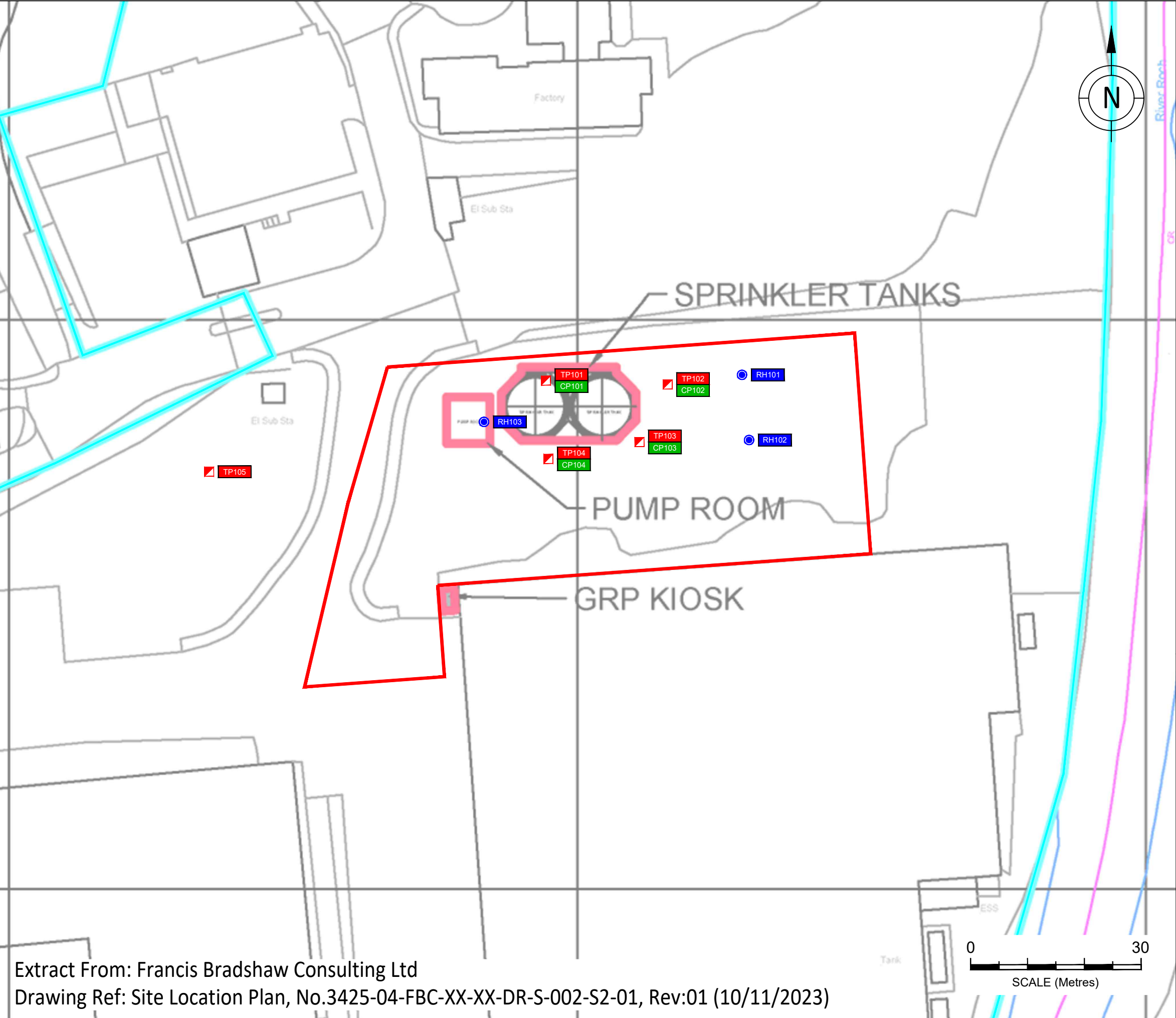
CD

Drawn:

Dec 2023

Extract From: Francis Bradshaw Consulting Ltd

Drawing Ref: Site Location Plan, No.3425-04-FBC-XX-XX-DR-S-002-S2-01, Rev:01 (10/11/2023)



### KEY

|  |                                |
|--|--------------------------------|
|  | Site Boundary                  |
|  | Ownership Boundary             |
|  | Trial Pit (TP)                 |
|  | Cable Percussive Borehole (CP) |
|  | Rotary Borehole (RH)           |

Sampling Locations and features annotated by LK Consult Ltd are approximate and are based upon observed measurements unless otherwise stated. Do not scale from this drawing and work from marked dimensions only. All dimensions and features should be confirmed on site by the Contractor. Where this drawing includes information provided to LK Consult Ltd by others, LK Consult Ltd gives no warranty, representation or assurance as to the accuracy of such information.

|                                                   |                                                |                           |                       |
|---------------------------------------------------|------------------------------------------------|---------------------------|-----------------------|
| Client:<br><b>Tetrosyl Group Ltd</b>              |                                                |                           |                       |
| Site:<br><b>Tetrosyl Group Ltd, Bury</b>          |                                                |                           |                       |
| Title:<br><b>Site Investigation Location Plan</b> |                                                |                           |                       |
| Job No.:<br><b>LKC 23 1650</b>                    | Scale (See Scale Bar):<br><b>See Scale Bar</b> | Figure:<br><b>3</b>       | Revision:<br><b>A</b> |
| Drawn By:<br><b>AC</b>                            | Checked By:<br><b>CD</b>                       | Drawn:<br><b>Feb 2024</b> |                       |

## **Appendix B – Specification for Highways Works**

**TABLE 6/1: (11/05) Acceptable Earthworks Materials: Classification and Compaction Requirements (See footnotes)**

| Class           | General Material Description       | Typical Use  | Permitted Constituents (All Subject to Requirements of Clause 601 and Appendix 6/1)                                                                                                                | Material Properties Required for Acceptability (In Addition to Requirements on Use of Fill Materials in Clause 601 and Testing in Clause 631) |                                        |                           |         | Compaction Requirements in Clause 612 | Class |   |
|-----------------|------------------------------------|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|---------------------------|---------|---------------------------------------|-------|---|
|                 |                                    |              |                                                                                                                                                                                                    | Property (See Exceptions in Previous Column)                                                                                                  | Defined and Tested in Accordance with: | Acceptable Limits Within: |         |                                       |       |   |
|                 |                                    |              |                                                                                                                                                                                                    |                                                                                                                                               |                                        | Lower                     | Upper   |                                       |       |   |
| G E N E R A L   | Well graded granular material      | General Fill | Any material, or combination of materials, other than material designated as Class 3 in the Contract. (Properties (i), (ii) and (iv) in next column, shall not apply to chalk). Recycled aggregate | (i) grading                                                                                                                                   | BS 1377 : part 2                       | Tab 6/2                   | Tab 6/2 | Tab 6.4 Method 2                      | 1     | A |
|                 |                                    |              |                                                                                                                                                                                                    | (ii) uniformity coefficient                                                                                                                   | See Note 5                             | 10                        | -       |                                       |       |   |
|                 |                                    |              |                                                                                                                                                                                                    | (iii) mc                                                                                                                                      | BS 1377 : Part 2                       | App 6/1                   | App 6/1 |                                       |       |   |
|                 |                                    |              |                                                                                                                                                                                                    | (iv) MCV                                                                                                                                      | Clause 632                             | App 6/1                   | App 6/1 |                                       |       |   |
|                 |                                    |              |                                                                                                                                                                                                    | (v) IDD of chalk                                                                                                                              | Clause 634                             | -                         | App 6/1 |                                       |       |   |
| G R A N U L A R | Uniformly graded granular material | General Fill | Any material, or combination of materials, other than chalk. Recycled aggregate                                                                                                                    | (i) grading                                                                                                                                   | BS 1377 : Part 2                       | Tab 6/2                   | Tab 6/2 | Tab 6.4 Method 3                      | 1     | B |
|                 |                                    |              |                                                                                                                                                                                                    | (ii) uniformity coefficient                                                                                                                   | See Note 5                             | -                         | 10      |                                       |       |   |
|                 |                                    |              |                                                                                                                                                                                                    | (iii) mc                                                                                                                                      | BS 1377 : Part 2                       | App 6/1                   | App 6/1 |                                       |       |   |
|                 |                                    |              |                                                                                                                                                                                                    | (iv) MCV                                                                                                                                      | Clause 632                             | App 6/1                   | App 6/1 |                                       |       |   |
| F I L L         | Coarse granular material           | General Fill | Any material, or combination of materials, other than material designated as Class 3 in the Contract. (Properties (i) and (ii) in next column, shall not apply to chalk). Recycled aggregate       | (i) grading                                                                                                                                   | BS 1377 : Part 2                       | Tab 6/2                   | Tab 6/2 | Tab 6.4 Method 5                      | 1     | C |
|                 |                                    |              |                                                                                                                                                                                                    | (ii) uniformity coefficient                                                                                                                   | See Note 5                             | 5                         | -       |                                       |       |   |
|                 |                                    |              |                                                                                                                                                                                                    | (iii) Los Angeles coefficient                                                                                                                 | Clause 635                             | -                         | 50      |                                       |       |   |

**TABLE 6/1: (11/05) Acceptable Earthworks Materials: Classification and Compaction Requirements (See footnotes) (continued)**

| Class | General Material Description | Typical Use  | Permitted Constituents (All Subject to Requirements of Clause 601 and Appendix 6/1) | Material Properties Required for Acceptability (In Addition to Requirements on Use of Fill Materials in Clause 601 and Testing in Clause 631) |                                        |                           |         | Compaction Requirements in Clause 612                                                                                                                                                       | Class |   |
|-------|------------------------------|--------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|---------------------------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|---|
|       |                              |              |                                                                                     | Property (See Exceptions in Previous Column)                                                                                                  | Defined and Tested in Accordance with: | Acceptable Limits Within: |         |                                                                                                                                                                                             |       |   |
|       |                              |              |                                                                                     |                                                                                                                                               |                                        | Lower                     | Upper   |                                                                                                                                                                                             |       |   |
| 2     | Wet cohesive material        | General Fill | Any material, or combination of materials, other than chalk.                        | (i) grading                                                                                                                                   | BS 1377 : part 2                       | Tab 6/2                   | Tab 6/2 | Tab 6/4 Method 1 except for materials with liquid limit greater than 50, determined by BS1377 : Part 2, only deadweight tamping or vibratory tamping rollers or grid rollers shall be used. | 2     | A |
|       |                              |              |                                                                                     | (ii) plastic limit (PL)                                                                                                                       | BS 1377 : part 2                       | -                         | -       |                                                                                                                                                                                             |       |   |
|       |                              |              |                                                                                     | (iii) mc                                                                                                                                      | BS 1377 : Part 2                       | PL-4%                     | App 6/1 |                                                                                                                                                                                             |       |   |
|       |                              |              |                                                                                     | (iv) MCV                                                                                                                                      | Clause 632                             | App 6.1                   | App 6/1 |                                                                                                                                                                                             |       |   |
|       |                              |              |                                                                                     | (v) Undrained shear strength of remoulded material                                                                                            | Clause 633                             | App 6.1                   | App 6/1 |                                                                                                                                                                                             |       |   |
| 2     | Dry cohesive material        | General Fill | Any material, or combination of materials, other than chalk                         | (i) grading                                                                                                                                   | BS 1377 : Part 2                       | Tab 6/2                   | Tab 6/2 | Tab 6.4 Method 2                                                                                                                                                                            | 2     | B |
|       |                              |              |                                                                                     | (ii) plastic limit (PL)                                                                                                                       | BS 1377 : Part 2                       | -                         | -       |                                                                                                                                                                                             |       |   |
|       |                              |              |                                                                                     | (iii) mc                                                                                                                                      | BS 1377 : Part 2                       | App 6.1                   | PL-4%   |                                                                                                                                                                                             |       |   |
|       |                              |              |                                                                                     | (iv) MCV                                                                                                                                      | Clause 632                             | App 6.1                   | App 6/1 |                                                                                                                                                                                             |       |   |
|       |                              |              |                                                                                     | (v) undrained shear strength of remoulded material                                                                                            | Clause 633                             | App 6.1                   | App 6/1 |                                                                                                                                                                                             |       |   |

TABLE 6/1: Acceptable Earthworks Materials: Classification and Compaction Requirements (See footnotes) (continued)

| Class       | General Material Description                    | Typical Use  | Permitted Constituents (All Subject to Requirements of Clause 601 and Appendix 6/1)         | Material Properties Required for Acceptability (In Addition to Requirements on Use of Fill Materials in Clause 601 and Testing in Clause 631) |                                        |                                    |         | Compaction Requirements in Clause 612                                             | Class |
|-------------|-------------------------------------------------|--------------|---------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|------------------------------------|---------|-----------------------------------------------------------------------------------|-------|
|             |                                                 |              |                                                                                             | Property (See Exceptions in Previous Column)                                                                                                  | Defined and Tested in Accordance with: | Acceptable Limits Within:          |         |                                                                                   |       |
|             |                                                 |              |                                                                                             |                                                                                                                                               |                                        | Lower                              | Upper   |                                                                                   |       |
| GENERAL     | Stony cohesive material                         | General Fill | Any material, or combination of materials, other than chalk                                 | (i) grading                                                                                                                                   | BS 1377 : part 2                       | Tab 6/2                            | Tab 6/2 | Tab 6.4 Method 2                                                                  | 2     |
|             |                                                 |              |                                                                                             | (ii) plastic limit (PL)                                                                                                                       | BS 1377 : part 2                       | -                                  | -       |                                                                                   |       |
|             |                                                 |              |                                                                                             | (iii) mc                                                                                                                                      | BS 1377 : Part 2                       | App 6/1                            | App 6/1 |                                                                                   |       |
|             |                                                 |              |                                                                                             | (iv) MCV                                                                                                                                      | Clause 632                             | App 6/1                            | -       |                                                                                   |       |
|             |                                                 |              |                                                                                             | (v) Undrained shear strength of remoulded material                                                                                            | Clause 633                             | App 6/1                            | -       |                                                                                   |       |
| COARSE SILT | Silty cohesive material                         | General Fill | Any material, or combination of materials, other than chalk                                 | (i) grading                                                                                                                                   | BS 1377 : Part 2                       | Tab 6/2                            | Tab 6/2 | Tab 6.4 Method 3                                                                  | 2     |
|             |                                                 |              |                                                                                             | (ii) mc                                                                                                                                       | BS 1377 : Part 2                       | App 6/1                            | App 6/1 |                                                                                   |       |
|             |                                                 |              |                                                                                             | (iii) MCV                                                                                                                                     | Clause 632                             | App 6/1                            | App 6/1 |                                                                                   |       |
|             |                                                 |              |                                                                                             | (iv) undrained shear strength of remoulded material                                                                                           | Clause 633                             | App 6/1                            | App 6/1 |                                                                                   |       |
| FINE        | Reclaimed pulverised fuel ash cohesive material | General Fill | Reclaimed material from lagoon or stockpile containing not more than 20% furnace bottom ash | (i) mc                                                                                                                                        | BS 1377 : Part 2                       | To enable compaction to Clause 612 |         | End product 95% of maximum dry density of BS 1377 : Part 4 (2.5 kg rammer method) | 2     |
|             |                                                 |              |                                                                                             | (ii) bulk density                                                                                                                             | BS 1377 : Part 9                       | App 6/1                            | App 6/1 |                                                                                   |       |
|             | -                                               |              |                                                                                             |                                                                                                                                               |                                        |                                    |         |                                                                                   | -     |

**TABLE 6/1: (11/05) Acceptable Earthworks Materials: Classification and Compaction Requirements (See footnotes) (continued)**

| Class          |   | General Material Description       | Typical Use             | Permitted Constituents (All Subject to Requirements of Clause 601 and Appendix 6/1) | Material Properties Required for Acceptability (In Addition to Requirements on Use of Fill Materials in Clause 601 and Testing in Clause 631) |                                        |                           |            | Compaction Requirements in Clause 612                                                                                             | Class |   |
|----------------|---|------------------------------------|-------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|---------------------------|------------|-----------------------------------------------------------------------------------------------------------------------------------|-------|---|
| 3              | - | -                                  |                         |                                                                                     | Property (See Exceptions in Previous Column)                                                                                                  | Defined and Tested in Accordance with: | Acceptable Limits Within: |            |                                                                                                                                   |       |   |
|                |   |                                    |                         |                                                                                     |                                                                                                                                               |                                        | Lower                     | Upper      |                                                                                                                                   |       |   |
| GFELCNLCHALK   | - | Chalk                              | General Fill            | Chalk and associated materials all designated as Class 3 in the Contract            | (i) mc                                                                                                                                        | BS 1377 : Part 2                       | -                         | App 6/1    | Tab 6/4 Method 4, or Method 1 if required in App 6/1. All types of vibratory rollers of Categories over 1800 kg shall not be used | 3     | - |
|                | - |                                    |                         |                                                                                     | (ii) IDD                                                                                                                                      | Clause 634                             | App 6/1                   | App 6/1    |                                                                                                                                   |       |   |
| LFAINLDSLSCAPE | - | Various                            | Fill to landscape areas | See App 6/1                                                                         | (i) grading                                                                                                                                   | BS 1377 : Part 2                       | App 6/1                   | App 6/1    | See Clause 620 and App 6.1                                                                                                        | 4     | - |
|                | - |                                    |                         |                                                                                     | (ii) mc                                                                                                                                       | BS 1377 : Part 2                       | -                         | App 6/1    |                                                                                                                                   |       |   |
|                |   |                                    |                         |                                                                                     | (iii) MCV                                                                                                                                     | Clause 632                             | App 6/1                   | App 6/1    |                                                                                                                                   |       |   |
| 5              | A | Topsoil, or turf, existing on site | Topsoiling              | Topsoil or turf designated as Class 5A in the Contract                              | (i) grading                                                                                                                                   | Clause 618                             | -                         | Clause 618 | -                                                                                                                                 | 5     | A |
| 5              | B | Imported topsoil                   | Topsoiling              | General purpose grade complying with BS 3882                                        | -                                                                                                                                             | -                                      | -                         | -          | -                                                                                                                                 | 5     | B |

**TABLE 6/1: (11/05) Acceptable Earthworks Materials: Classification and Compaction Requirements (See footnotes) (continued)**

| Class           | General Material Description           | Typical Use   | Permitted Constituents (All Subject to Requirements of Clause 601 and Appendix 6/1)                                                                                                                                                                            | Material Properties Required for Acceptability (In Addition to Requirements on Use of Fill Materials in Clause 601 and Testing in Clause 631) |                                        |                           |         | Compaction Requirements in Clause 612 | Class |   |   |
|-----------------|----------------------------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|---------------------------|---------|---------------------------------------|-------|---|---|
|                 |                                        |               |                                                                                                                                                                                                                                                                | Property (See Exceptions in Previous Column)                                                                                                  | Defined and Tested in Accordance with: | Acceptable Limits Within: |         |                                       | 6     | A | - |
|                 |                                        |               |                                                                                                                                                                                                                                                                |                                                                                                                                               |                                        | Lower                     | Upper   |                                       |       |   |   |
| S E L E C T E D | Selected well graded granular material | Below water   | Natural gravel, natural sand, crushed gravel, crushed rock other than argillaceous rock, crushed concrete, chalk, well burnt colliery spoil or any combination thereof. (Properties (i) and (ii) in next column, shall not apply to chalk.) Recycled aggregate | (i) grading                                                                                                                                   | BS 1377 : Part 2 (On-site)             | Tab 6/2                   | Tab 6/2 | No compaction                         | 6     | A | - |
|                 |                                        |               |                                                                                                                                                                                                                                                                | (ii) uniformity                                                                                                                               | See Note 5                             | 10                        | -       |                                       |       |   |   |
|                 |                                        |               |                                                                                                                                                                                                                                                                | (iii) SMC of chalk index                                                                                                                      | Clause 634                             | -                         | 20%     |                                       |       |   |   |
|                 |                                        |               |                                                                                                                                                                                                                                                                | (iv) plasticity index                                                                                                                         | BS 1377 : Part 2                       | Non-plastic               |         |                                       |       |   |   |
| G R A N U L A R | Selected coarse granular material      | Starter layer | Natural gravel, natural sand, crushed gravel, crushed rock, crushed concrete, chalk, well burnt colliery spoil, slag or any combination thereof. (Properties (ii) and (iii) in next column, shall not apply to chalk.) Recycled aggregate                      | (i) grading                                                                                                                                   | BS 1377 : Part 2 (On-site)             | Tab 6/2                   | Tab 6/2 | Tab 6.4 Method 5                      | 6     | B | - |
|                 |                                        |               |                                                                                                                                                                                                                                                                | (ii) plasticity index                                                                                                                         | BS EN 933-2 (Off-site)                 | Tab 6/5                   | Tab 6/5 |                                       |       |   |   |
|                 |                                        |               |                                                                                                                                                                                                                                                                | (iii) Los Angeles coefficient                                                                                                                 | Clause 635                             | -                         | 50      |                                       |       |   |   |
|                 |                                        |               |                                                                                                                                                                                                                                                                | (iv) plasticity index                                                                                                                         | BS 1377 : Part 2                       | Non-plastic               |         |                                       |       |   |   |
| F I L L         |                                        |               |                                                                                                                                                                                                                                                                |                                                                                                                                               |                                        |                           |         |                                       |       |   |   |
|                 |                                        |               |                                                                                                                                                                                                                                                                |                                                                                                                                               |                                        |                           |         |                                       |       |   |   |
|                 |                                        |               |                                                                                                                                                                                                                                                                |                                                                                                                                               |                                        |                           |         |                                       |       |   |   |
|                 |                                        |               |                                                                                                                                                                                                                                                                |                                                                                                                                               |                                        |                           |         |                                       |       |   |   |

**TABLE 6/1: (11/05) Acceptable Earthworks Materials: Classification and Compaction Requirements (See footnotes) (continued)**

| Class                                | General Material Description                | Typical Use                             | Permitted Constituents (All Subject to Requirements of Clause 601 and Appendix 6/1)                                                                                                                                                                         | Material Properties Required for Acceptability (In Addition to Requirements on Use of Fill Materials in Clause 601 and Testing in Clause 631) |                                        |                           |         | Compaction Requirements in Clause 612 | Class |   |   |
|--------------------------------------|---------------------------------------------|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|---------------------------|---------|---------------------------------------|-------|---|---|
|                                      |                                             |                                         |                                                                                                                                                                                                                                                             | Property (See Exceptions in Previous Column)                                                                                                  | Defined and Tested in Accordance with: | Acceptable Limits Within: |         |                                       | 6     | C | - |
|                                      |                                             |                                         |                                                                                                                                                                                                                                                             |                                                                                                                                               |                                        | Lower                     | Upper   |                                       |       |   |   |
| S<br>E<br>L<br>E<br>C<br>T<br>E<br>D | Selected uniformly graded granular material | Starter layer                           | Natural gravel, natural sand, crushed gravel, crushed rock other than argillaceous rock, crushed concrete, chalk, well burnt colliery spoil, slag or any combination thereof. (Property (iii) in next column, shall not apply to chalk.) Recycled aggregate | (i) grading                                                                                                                                   | BS 1377 : Part 2 (On-site)             | Tab 6/2                   | Tab 6/2 | Tab 6/4 Method 3                      | 6     | C | - |
|                                      |                                             |                                         |                                                                                                                                                                                                                                                             | (ii) uniformity coefficient                                                                                                                   | See Note 5                             | -                         | 10      |                                       |       |   |   |
|                                      |                                             |                                         |                                                                                                                                                                                                                                                             | (iii) plasticity index                                                                                                                        | BS 1377 : Part 2                       | Non-plastic               |         |                                       |       |   |   |
|                                      |                                             |                                         |                                                                                                                                                                                                                                                             | (iv) Los Angeles coefficient                                                                                                                  | Clause 635                             | -                         | 50      |                                       |       |   |   |
|                                      |                                             |                                         |                                                                                                                                                                                                                                                             | (v) mc                                                                                                                                        | BS 1377 : Part 2                       | App 6/1                   | App 6/1 |                                       |       |   |   |
| G<br>R<br>A<br>N<br>U<br>L<br>A<br>R | Selected uniformly graded granular material | Starter layer below pulverised fuel ash | Natural gravel, natural sand, crushed gravel, crushed rock other than argillaceous rock, crushed concrete, chalk, well burnt colliery spoil, slag or any combination thereof. Recycled aggregate                                                            | (i) grading                                                                                                                                   | BS 1377 : Part 2 (On-site)             | Tab 6/2                   | Tab 6/2 | Tab 6/4 Method 4                      | 6     | D | - |
|                                      |                                             |                                         |                                                                                                                                                                                                                                                             | (ii) uniformity coefficient                                                                                                                   | See Note 5                             | -                         | 10      |                                       |       |   |   |
|                                      |                                             |                                         |                                                                                                                                                                                                                                                             | (iii) plasticity index                                                                                                                        | BS 1377 : Part 2                       | Non-plastic               |         |                                       |       |   |   |
|                                      |                                             |                                         |                                                                                                                                                                                                                                                             | (iv) mc                                                                                                                                       | BS 1377 : Part 2                       | App 6/1                   | App 6/1 |                                       |       |   |   |
|                                      |                                             |                                         |                                                                                                                                                                                                                                                             | (v) MCV                                                                                                                                       | Clause 632                             | App 6/1                   | App 6/1 |                                       |       |   |   |
| F<br>I<br>L<br>L                     |                                             |                                         |                                                                                                                                                                                                                                                             |                                                                                                                                               |                                        |                           |         |                                       |       |   |   |
|                                      |                                             |                                         |                                                                                                                                                                                                                                                             |                                                                                                                                               |                                        |                           |         |                                       |       |   |   |
|                                      |                                             |                                         |                                                                                                                                                                                                                                                             |                                                                                                                                               |                                        |                           |         |                                       |       |   |   |
|                                      |                                             |                                         |                                                                                                                                                                                                                                                             |                                                                                                                                               |                                        |                           |         |                                       |       |   |   |
|                                      |                                             |                                         |                                                                                                                                                                                                                                                             |                                                                                                                                               |                                        |                           |         |                                       |       |   |   |

**TABLE 6/1: (11/08) Acceptable Earthworks Materials: Classification and Compaction Requirements (See footnotes) (continued)**

| Class                                                                                                    | General Material Description          | Typical Use                                   | Permitted Constituents (All Subject to Requirements of Clause 601 and Appendix 6/1)                                                                                                                  | Material Properties Required for Acceptability (In Addition to Requirements on Use of Fill Materials in Clause 601 and Testing in Clause 631) |                                        |                           |                              | Compaction Requirements in Clause 612 | Class |
|----------------------------------------------------------------------------------------------------------|---------------------------------------|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|---------------------------|------------------------------|---------------------------------------|-------|
|                                                                                                          |                                       |                                               |                                                                                                                                                                                                      | Property (See Exceptions in Previous Column)                                                                                                  | Defined and Tested in Accordance with: | Acceptable Limits Within: |                              |                                       |       |
|                                                                                                          |                                       |                                               |                                                                                                                                                                                                      |                                                                                                                                               |                                        | Lower                     | Upper                        |                                       |       |
| S<br>E<br>L<br>E<br>C<br>T<br>E<br>D<br><br>G<br>R<br>A<br>N<br>U<br>L<br>A<br>R<br><br>F<br>I<br>L<br>L | Selected granular material (Class 9A) | For stabilisation with cement to form capping | Any material, or combination of materials, other than unburnt colliery spoil and argillaceous rock. (Properties (i), (ii) and (iii) in next column, shall not apply to chalk.)<br>Recycled aggregate | (i) grading                                                                                                                                   | BS 1377 : Part 2 (On-site)             | Tab 6/2                   | Tab 6/2                      | Not applicable                        | 6     |
|                                                                                                          |                                       |                                               |                                                                                                                                                                                                      |                                                                                                                                               | BS EN 933-2 (Off-site)                 | Tab 6/5                   | Tab 6/5                      |                                       |       |
|                                                                                                          |                                       |                                               |                                                                                                                                                                                                      | (ii) mc                                                                                                                                       | BS 1377 : Part 2                       | -                         | App 6/1                      |                                       |       |
|                                                                                                          |                                       |                                               |                                                                                                                                                                                                      | (iii) liquid limit                                                                                                                            | BS 1377 : Part 2                       | -                         | 45                           |                                       |       |
|                                                                                                          |                                       |                                               |                                                                                                                                                                                                      | (iv) plasticity index                                                                                                                         | BS 1377 : Part 2                       | -                         | 20                           |                                       |       |
|                                                                                                          |                                       |                                               |                                                                                                                                                                                                      | (v) organic matter                                                                                                                            | BS 1377 : Part 3                       | -                         | App 6/1                      |                                       |       |
|                                                                                                          |                                       |                                               |                                                                                                                                                                                                      | (vi) water soluble (WS) sulfate content                                                                                                       | TRL Report 477, Test No. 1             | -                         | 3000 mg/l as SO <sub>4</sub> |                                       |       |
|                                                                                                          |                                       |                                               |                                                                                                                                                                                                      | (vii) oxidisable sulfides (OS) content                                                                                                        | TRL Report 477, Tests No. 2 and 4      | -                         | 0.6% as SO <sub>4</sub>      |                                       |       |
|                                                                                                          |                                       |                                               |                                                                                                                                                                                                      | (viii) SMC of chalk                                                                                                                           | Clause 634                             |                           | 20%                          |                                       |       |

**TABLE 6/1: (11/09) Acceptable Earthworks Materials: Classification and Compaction Requirements (See footnotes) (continued)**

| Class                           | General Material Description                | Typical Use | Permitted Constituents (All Subject to Requirements of Clause 601 and Appendix 6/1)                                                                                                                                                                                                                                                                                                                                                                                                   | Material Properties Required for Acceptability (In Addition to Requirements on Use of Fill Materials in Clause 601 and Testing in Clause 631) |                                            |                           |            | Compaction Requirements in Clause 612 | Class |     |
|---------------------------------|---------------------------------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|---------------------------|------------|---------------------------------------|-------|-----|
|                                 |                                             |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Property (See Exceptions in Previous Column)                                                                                                  | Defined and Tested in Accordance with:     | Acceptable Limits Within: |            |                                       |       |     |
|                                 |                                             |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                               |                                            | Lower                     | Upper      |                                       |       |     |
| S E L E C T E D G R A N U L A R | Selected granular material (fine grading)   | Capping     | Any material, or combination of materials - including recycled aggregates with not more than 50% by mass of recycled bituminous planings and granulated asphalt, but excluding materials that contain tar and tar-bitumen binders, unburnt colliery spoil, argillaceous rock and chalk.<br><br>Property (vi) in the next column shall not apply if the Class Ra (asphalt) content of any recycled aggregate is 20% or less.                                                           | (i) grading                                                                                                                                   | BS 1377 : Part 2                           | Tab 6/2                   | Tab 6/2    | Tab 6/4 Method 6                      | 6     | F 1 |
|                                 |                                             |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | (ii) optimum mc                                                                                                                               | BS 1377 : Part 4 (vibrating hammer method) | -                         | -          |                                       |       |     |
|                                 |                                             |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | (iii) mc                                                                                                                                      | BS 1377 : Part 2                           | Optimum mc - 2%           | Optimum mc |                                       |       |     |
|                                 |                                             |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | (iv) Los Angeles coefficient                                                                                                                  | Clause 635                                 | -                         | 60         |                                       |       |     |
|                                 |                                             |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | (v) Class Ra (asphalt) content                                                                                                                | Clause 710                                 | -                         | 50%        |                                       |       |     |
|                                 |                                             |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | (vi) bitumen content                                                                                                                          | BS EN 12697-1 or BS EN 12697-39            | -                         | 2.0%       |                                       |       |     |
| U L T R A F I N E               | Selected granular material (coarse grading) | Capping     | Any material, or combination of materials - including recycled aggregates with not more than 50% by mass of recycled bituminous planings and granulated asphalt, but excluding materials that contain tar and tar-bitumen binders, unburnt colliery spoil and argillaceous rock.<br><br>Property (i) in the next column shall not apply to chalk.<br><br>Property (vi) in the next column shall not apply if the Class Ra (asphalt) content of any recycled aggregate is 20% or less. | (i) grading                                                                                                                                   | BS 1377 : Part 2                           | Tab 6/2                   | Tab 6/2    | Tab 6/4 Method 6                      | 6     | F 2 |
|                                 |                                             |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | (ii) optimum mc                                                                                                                               | BS 1377 : Part 4 (vibrating hammer method) | -                         | -          |                                       |       |     |
|                                 |                                             |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | (iii) mc                                                                                                                                      | BS 1377 : Part 2                           | Optimum mc - 2%           | Optimum mc |                                       |       |     |
|                                 |                                             |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | (iv) Los Angeles coefficient                                                                                                                  | Clause 635                                 | -                         | 50         |                                       |       |     |
|                                 |                                             |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | (v) Class Ra (asphalt) content                                                                                                                | Clause 710                                 | -                         | 50%        |                                       |       |     |
|                                 |                                             |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | (vi) bitumen content                                                                                                                          | BS EN 12697-1 or BS EN 12697-39            | -                         | 2.0%       |                                       |       |     |

**TABLE 6/1: (11/09) Acceptable Earthworks Materials: Classification and Compaction Requirements (See footnotes) (continued)**

| Class                           | General Material Description                                               | Typical Use | Permitted Constituents (All Subject to Requirements of Clause 601 and Appendix 6/1)                                                                                                                                                                                                                                                                                                                                                                                           | Material Properties Required for Acceptability (In Addition to Requirements on Use of Fill Materials in Clause 601 and Testing in Clause 631) |                                                                    |                           |            | Compaction Requirements in Clause 612                              | Class |   |
|---------------------------------|----------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|---------------------------|------------|--------------------------------------------------------------------|-------|---|
|                                 |                                                                            |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Property (See Exceptions in Previous Column)                                                                                                  | Defined and Tested in Accordance with:                             | Acceptable Limits Within: |            |                                                                    |       |   |
|                                 |                                                                            |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                               |                                                                    | Lower                     | Upper      |                                                                    |       |   |
| S E L E C T E D G R A N U L A R | Selected granular material                                                 | Capping     | Any material, or combination of materials with not less than 50% by mass of recycled bituminous planings and granulated asphalt, but excluding materials that contain tar and tar-bitumen binders, unburnt colliery spoil and argillaceous rock                                                                                                                                                                                                                               | (i) grading                                                                                                                                   | BS 1377 : Part 2 (On-site)                                         | Tab 6/2                   | Tab 6/2    | Tab 6/4 Method 6 Maximum Compacted layer thickness shall be 200 mm | 6     | F |
|                                 |                                                                            |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | (ii) optimum mc                                                                                                                               | Clause 613                                                         | -                         | -          |                                                                    |       |   |
|                                 |                                                                            |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | (iii) mc                                                                                                                                      | Clause 613                                                         | Optimum mc - 2%           | Optimum mc |                                                                    |       |   |
|                                 |                                                                            |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | (iv) Class Ra (asphalt) content                                                                                                               | Clause 710                                                         | 50%                       |            |                                                                    |       |   |
|                                 |                                                                            |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | (v) bitumen content                                                                                                                           | BS EN 12697-1 or BS EN 12697-39                                    | -                         | 10%        |                                                                    |       |   |
| 6 F                             | Selected granular material (fine grading)<br><br>- imported on to the Site | Capping     | Unbound mixture complying with BS EN 13285.<br><br>Any material, or combination of materials - including recycled aggregates with not more than 50% by mass of recycled bituminous planings and granulated asphalt, but excluding materials that contain tar and tar-bitumen binders, unburnt colliery spoil, argillaceous rock and chalk.<br><br>Property (x) in the next column shall not apply if the Class Ra (asphalt) content of any recycled aggregate is 20% or less. | (i) Size designation and overall grading category                                                                                             | BS EN 13285 - 0/31.5 and $G_{\text{F}}$                            | Tab 6/5                   | Tab 6/5    | Tab 6/4 Method 6                                                   | 6     | F |
|                                 |                                                                            |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | (ii) Maximum fines and oversize categories                                                                                                    | BS EN 13285 - $U_{\text{F}}$ and $OC_{\text{F}}$                   | Tab 6/5                   | Tab 6/5    |                                                                    |       |   |
|                                 |                                                                            |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | (iii) Los Angeles coefficient                                                                                                                 | BS EN 13242 - $LA_{60}$                                            | -                         | 60         |                                                                    |       |   |
|                                 |                                                                            |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | (iv) Volume stability of blast furnace slag                                                                                                   | BS EN 13242 - free from dicalcium silicate and iron disintegration | -                         | -          |                                                                    |       |   |

**TABLE 6/1: (11/09) Acceptable Earthworks Materials: Classification and Compaction Requirements (See footnotes) (continued)**

| Class                  | General Material Description | Typical Use | Permitted Constituents (All Subject to Requirements of Clause 601 and Appendix 6/1) | Material Properties Required for Acceptability (In Addition to Requirements on Use of Fill Materials in Clause 601 and Testing in Clause 631) |                                                       |                            |                       | Compaction Requirements in Clause 612 | Class |
|------------------------|------------------------------|-------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|----------------------------|-----------------------|---------------------------------------|-------|
|                        |                              |             |                                                                                     | Property (See Exceptions in Previous Column)                                                                                                  | Defined and Tested in Accordance with:                | Acceptable Limits Within:  |                       |                                       |       |
|                        |                              |             |                                                                                     |                                                                                                                                               |                                                       | Lower                      | Upper                 |                                       |       |
| SELECTED GRANULAR FILL | (contd)                      |             |                                                                                     | (v) Volume stability of steel (BOF) and F/AF slag                                                                                             | BS EN 13242 - $V_5$                                   | -                          | -                     |                                       |       |
|                        |                              |             |                                                                                     | (vi) Other aggregate requirements                                                                                                             | BS EN 13242 - Category <sub>NR</sub> (no requirement) | -                          | -                     |                                       |       |
|                        |                              |             |                                                                                     | (vii) Laboratory dry density and optimum water content                                                                                        | BS EN 13285, clause 5.3 - declared values             | -                          | -                     |                                       |       |
|                        |                              |             |                                                                                     | (viii) Water content                                                                                                                          | BS EN 1097-5                                          | Optimum <sub>WC - 2%</sub> | Optimum <sub>WC</sub> |                                       |       |
|                        |                              |             |                                                                                     | (ix) Clas Ra (asphalt) content                                                                                                                | Clause 710                                            | -                          | 50%                   |                                       |       |
|                        |                              |             |                                                                                     | (x) bitumen content                                                                                                                           | BS EN 12697-1 or BS EN 12697-39                       | -                          | 2.0%                  |                                       |       |

**TABLE 6/1: (11/09) Acceptable Earthworks Materials: Classification and Compaction Requirements (See footnotes) (continued)**

| Class                                   | General Material Description                                                 | Typical Use | Permitted Constituents (All Subject to Requirements of Clause 601 and Appendix 6/1)                                                                                                                                                                                                                                                                                                                                                                                           | Material Properties Required for Acceptability (In Addition to Requirements on Use of Fill Materials in Clause 601 and Testing in Clause 631) |                                                                    |                           |               | Compaction Requirements in Clause 612 | Class |   |
|-----------------------------------------|------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|---------------------------|---------------|---------------------------------------|-------|---|
|                                         |                                                                              |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Property (See Exceptions in Previous Column)                                                                                                  | Defined and Tested in Accordance with:                             | Acceptable Limits Within: |               |                                       |       |   |
|                                         |                                                                              |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                               |                                                                    | Lower                     | Upper         |                                       |       |   |
| S E L E C T E D G R A N U L A R F I L L | Selected granular material (coarse grading)<br><br>- imported on to the Site | Capping     | Unbound mixture complying with BS EN 13285.<br><br>Any material, or combination of materials - including recycled aggregates with not more than 50% by mass of recycled bituminous planings and granulated asphalt, but excluding materials that contain tar and tar-bitumen binders, unburnt colliery spoil, argillaceous rock and chalk.<br><br>Property (x) in the next column shall not apply if the Class Ra (asphalt) content of any recycled aggregate is 20% or less. | (i) Size designation and overall grading category                                                                                             | BS EN 13285 - 0/80 and $G_F$                                       | Tab 6/5                   | Tab 6/5       | Tab 6/4 Method 6                      | 6     | 5 |
|                                         |                                                                              |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | (ii) Maximum fines and oversize categories                                                                                                    | BS EN 13285 - $UF_{12}$ and $OC_{75}$                              | Tab 6/5                   | Tab 6/5       |                                       |       |   |
|                                         |                                                                              |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | (iii) Los Angeles coefficient                                                                                                                 | BS EN 13242 - $LA_{50}$                                            | -                         | 50            |                                       |       |   |
|                                         |                                                                              |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | (iv) Volume stability of blast furnace slag                                                                                                   | BS EN 13242 - free from dicalcium silicate and iron disintegration | -                         | -             |                                       |       |   |
|                                         |                                                                              |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | (v) Volume stability of steel (BOF) and EAF slag                                                                                              | BS EN 13242 - $V_5$                                                | -                         | -             |                                       |       |   |
|                                         |                                                                              |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | (vi) Other aggregate requirements                                                                                                             | BS EN 13242 - Category $NR$ (no requirement)                       | -                         | -             |                                       |       |   |
|                                         |                                                                              |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | (vii) Laboratory dry density and optimum water content                                                                                        | BS EN 13285, clause 5.3 - declared values                          | -                         | -             |                                       |       |   |
|                                         |                                                                              |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | (viii) Water content                                                                                                                          | BS EN 1097-5                                                       | Optimum $w_c - 2\%$       | Optimum $w_c$ |                                       |       |   |
|                                         |                                                                              |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | (ix) Clas Ra (asphalt) content                                                                                                                | Clause 710                                                         | -                         | 50%           |                                       |       |   |
|                                         |                                                                              |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | (x) bitumen content                                                                                                                           | BS EN 12697-1 or BS EN 12697-39                                    | -                         | 2.0%          |                                       |       |   |

**TABLE 6/1: (11/05) Acceptable Earthworks Materials: Classification and Compaction Requirements (See footnotes) (continued)**

| Class                           | General Material Description | Typical Use                                                     | Permitted Constituents (All Subject to Requirements of Clause 601 and Appendix 6/1)                                                                                                                                                                                                                                                                                                                                                                                                               | Material Properties Required for Acceptability (In Addition to Requirements on Use of Fill Materials in Clause 601 and Testing in Clause 631) |                                        |                           |         |                  | Compaction Requirements in Clause 612 | Class |   |
|---------------------------------|------------------------------|-----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|---------------------------|---------|------------------|---------------------------------------|-------|---|
|                                 |                              |                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Property (See Exceptions in Previous Column)                                                                                                  | Defined and Tested in Accordance with: | Acceptable Limits Within: |         | 6                |                                       | G     | - |
|                                 |                              |                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                               |                                        | Lower                     | Upper   |                  |                                       |       |   |
| S E L E C T E D                 | Selected granular material   | Gabion filling                                                  | Natural gravel, crushed rock, crushed concrete or any combination thereof. None of these constituents shall include any argillaceous rock..                                                                                                                                                                                                                                                                                                                                                       | (i) grading                                                                                                                                   | BS 1377 : Part 2 (On-site)             | Tab 6/2                   | Tab 6/2 | None             | 6                                     | G     | - |
|                                 |                              |                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                               | BS EN 933-2 (Off-site)                 | Tab 6/5                   | Tab 6/5 |                  |                                       |       |   |
|                                 |                              |                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | (ii) Los Angeles coefficient                                                                                                                  | Clause 635                             | -                         | 50      |                  |                                       |       |   |
| G R A N U L A R F I L L         | Selected granular material   | Drainage layer to reinforced soil and anchored earth structures | Natural gravel, natural sand, crushed gravel, crushed rock, crushed concrete, chalk, well burnt collicry spoil or any combination thereof. None of these constituents shall include any argillaceous rock. (Properties (vi), (vii), (viii), (ix), (x), (xi) and (xii) in next column only apply when metallic reinforcing or anchor elements, facing units or fastenings are used.) (Properties (ii) and (v) in next column shall not apply to chalk.) Recycled aggregate except recycled asphalt | (i) grading                                                                                                                                   | BS 1377 : Part 2 (On-site)             | Tab 6/2                   | Tab 6/2 | Tab 6/4 Method 3 | 6                                     | H     | - |
|                                 |                              |                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                               | BS EN 933-2 (Off-site)                 | Tab 6/5                   | Tab 6/5 |                  |                                       |       |   |
|                                 |                              |                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | (ii) plasticity index                                                                                                                         | BS 1377 : Part 2                       | Non-plastic               |         |                  |                                       |       |   |
|                                 |                              |                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | (iii) Los Angeles coefficient                                                                                                                 | Clause 635                             | -                         | 50      |                  |                                       |       |   |
|                                 |                              |                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | (iv) mc                                                                                                                                       | BS 1377 : Part 2                       | App 6/1                   | App 6/1 |                  |                                       |       |   |
|                                 |                              |                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | (v) MCV                                                                                                                                       | Clause 632                             | App 6/1                   | App 6/1 |                  |                                       |       |   |
|                                 |                              |                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | (vi) pH value                                                                                                                                 | BS 1377 : Part 3                       | Tab 6/3                   | Tab 6/3 |                  |                                       |       |   |
|                                 |                              |                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | (vii) chloride ion content                                                                                                                    | BS EN 1744-1                           | -                         | Tab 6/3 |                  |                                       |       |   |
|                                 |                              |                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | (viii) water soluble (WS) sulfate content                                                                                                     | TRL Report 447, Tests No. 1            | -                         | Tab 6/3 |                  |                                       |       |   |
|                                 |                              |                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | (ix) oxidisable sulfides (OS) content                                                                                                         | TRL Report 447, Tests Nos. 2 and 4     | -                         | Tab 6/3 |                  |                                       |       |   |
|                                 |                              |                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | (x) resistivity                                                                                                                               | Clause 637                             | Tab 6/3                   | -       |                  |                                       |       |   |
|                                 |                              |                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | (xi) redox potential                                                                                                                          | Clause 638                             | Tab 6/3                   | -       |                  |                                       |       |   |
|                                 |                              |                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | (xii) organic content                                                                                                                         | BS 1377 : Part 3                       | -                         | Tab 6/3 |                  |                                       |       |   |
| (xiii) microbial activity index | Table 6/3                    | -                                                               | Tab 6/3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                               |                                        |                           |         |                  |                                       |       |   |

**TABLE 6/1: (11/05) Acceptable Earthworks Materials: Classification and Compaction Requirements (See footnotes) (continued)**

| Class                                   | General Material Description           | Typical Use                                           | Permitted Constituents (All Subject to Requirements of Clause 601 and Appendix 6/1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Material Properties Required for Acceptability (In Addition to Requirements on Use of Fill Materials in Clause 601 and Testing in Clause 631) |                                        |                           |         | Compaction Requirements in Clause 612 | Class |
|-----------------------------------------|----------------------------------------|-------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|---------------------------|---------|---------------------------------------|-------|
|                                         |                                        |                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Property (See Exceptions in Previous Column)                                                                                                  | Defined and Tested in Accordance with: | Acceptable Limits Within: |         |                                       |       |
|                                         |                                        |                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                               |                                        | Lower                     | Upper   |                                       |       |
| S E L E C T E D G R A N U L A R F I L L | Selected well graded granular material | Fill to reinforced soil and anchored earth structures | Natural gravel, natural sand, crushed gravel, crushed rock, crushed concrete, slag, chalk, well burnt colliery spoil or any combination thereof except that chalk shall not be combined with any other constituent. None of these constituents shall include any argillaceous rock. (Properties (i), (ii) and (v) in next column shall not apply to chalk.) (Properties (viii), (ix), (x), (xi), (xii), (xiii) and (xiv) only apply when metallic reinforcing or anchor elements, facing units or fastenings are used.) Recycled aggregate except recycled asphalt | (i) grading                                                                                                                                   | BS 1377 : Part 2 (On-site)             | Tab 6/2                   | Tab 6/2 | Tab 6/4 Method 2                      | 6 I - |
|                                         |                                        |                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                               | BS EN 933-2 (Off-site)                 | Tab 6/5                   | Tab 6/5 |                                       |       |
|                                         |                                        |                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | (ii) uniformity coefficient                                                                                                                   | See Note 5                             | 10                        | -       |                                       |       |
|                                         |                                        |                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | (iii) SMC of chalk                                                                                                                            | Clause 634                             | -                         | 20%     |                                       |       |
|                                         |                                        |                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | (iv) mc                                                                                                                                       | BS 1377 : Part 2                       | App 6/1                   | App 6/1 |                                       |       |
|                                         |                                        |                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | (v) MCV                                                                                                                                       | Clause 632                             | App 6/1                   | App 6/1 |                                       |       |
|                                         |                                        |                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | (vi) effective angle of friction ( $\phi'$ ) and effective cohesion ( $c'$ )                                                                  | Clause 636                             | App 6/1                   | -       |                                       |       |
|                                         |                                        |                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | (vii) coefficient of friction and adhesion (fill/elements)                                                                                    | Clause 639                             | App 6/1                   | -       |                                       |       |
|                                         |                                        |                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | (viii) pH value                                                                                                                               | BS 1377 : Part 3                       | Tab 6/3                   | Tab 6/3 |                                       |       |
|                                         |                                        |                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | (ix) chloride ion content                                                                                                                     | BS EN 1744-1                           | -                         | Tab 6/3 |                                       |       |
|                                         |                                        |                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | (x) water soluble (WS) sulfate content                                                                                                        | TRL Report 447, Test No. 1             | -                         | Tab 6/3 |                                       |       |
|                                         |                                        |                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | (xi) oxidisable sulfides (OS) content                                                                                                         | TRL Report 447, Tests Nos. 2 and 4     | -                         | Tab 6/3 |                                       |       |
|                                         |                                        |                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | (xii) resistivity                                                                                                                             | Clause 637                             | Tab 6/3                   | -       |                                       |       |
|                                         |                                        |                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | (xiii) redox potential                                                                                                                        | Clause 638                             | Tab 6/3                   | -       |                                       |       |
|                                         |                                        |                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | (xiv) organic content                                                                                                                         | BS 1377 : Part 3                       | -                         | Tab 6/3 |                                       |       |
|                                         |                                        |                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | (xv) microbial activity index                                                                                                                 | Table 6/3                              | -                         | Tab 6/3 |                                       |       |

**TABLE 6/1: (11/05) Acceptable Earthworks Materials: Classification and Compaction Requirements (See footnotes) (continued)**

| Class                                         | General Material Description                | Typical Use                                | Permitted Constituents (All Subject to Requirements of Clause 601 and Appendix 6/1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Material Properties Required for Acceptability (In Addition to Requirements on Use of Fill Materials in Clause 601 and Testing in Clause 631) |                                        |                           |         | Compaction Requirements in Clause 612 | Class |   |   |
|-----------------------------------------------|---------------------------------------------|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|---------------------------|---------|---------------------------------------|-------|---|---|
|                                               |                                             |                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Property (See Exceptions in Previous Column)                                                                                                  | Defined and Tested in Accordance with: | Acceptable Limits Within: |         |                                       | 6     | J | - |
|                                               |                                             |                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                               |                                        | Lower                     | Upper   |                                       |       |   |   |
| S E L E C T E D<br>G R A N U L A R<br>F I L L | Selected uniformly graded granular material | Fill to reinforced soil and anchored earth | Natural gravel, natural sand, crushed gravel, crushed rock, crushed concrete, slag, chalk, well burnt colliery spoil or any combination thereof, except that chalk shall not be combined with any other constituent. None of these constituents shall include any argillaceous rock. (Properties (viii), (ix), (x), (xi), (xii), (xiii) and (xiv) in next column only apply when metallic reinforcing or anchor elements, facing units or fastenings are used.) (Properties (i), (ii) and (v) in next column shall not apply to chalk.) Recycled aggregate except recycled asphalt | (i) grading                                                                                                                                   | BS 1377 : Part 2 (On-site)             | Tab 6/2                   | Tab 6/2 | Tab 6/4 Method 3                      | 6     | J | - |
|                                               |                                             |                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | (ii) uniformity coefficient                                                                                                                   | See Note 5                             | 5                         | 10      |                                       |       |   |   |
|                                               |                                             |                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | (iii) SMC of chalk                                                                                                                            | Clause 634                             | -                         | 20%     |                                       |       |   |   |
|                                               |                                             |                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | (iv) mc                                                                                                                                       | BS 1377 : Part 2                       | App 6/1                   | App 6/1 |                                       |       |   |   |
|                                               |                                             |                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | (v) MCV                                                                                                                                       | Clause 632                             | App 6/1                   | App 6/1 |                                       |       |   |   |
|                                               |                                             |                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | (vi) effective angle of friction ( $\phi$ ) and effective cohesion ( $c'$ )                                                                   | Clause 636                             | App 6/1                   | -       |                                       |       |   |   |
|                                               |                                             |                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | (vii) coefficient of friction and adhesion (fill/elements)                                                                                    | Clause 639                             | App 6/1                   | -       |                                       |       |   |   |
|                                               |                                             |                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | (viii) pII value                                                                                                                              | BS 1377 : Part 3                       | Tab 6/3                   | Tab 6/3 |                                       |       |   |   |
|                                               |                                             |                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | (ix) chloride ion content                                                                                                                     | BS EN 1744-1                           | -                         | Tab 6/3 |                                       |       |   |   |
|                                               |                                             |                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | (x) water soluble (WS) sulfate content                                                                                                        | TRL Report 447, Test No. 1             | -                         | Tab 6/3 |                                       |       |   |   |
|                                               |                                             |                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | (xi) oxidisable sulfides (OS) content                                                                                                         | TRL Report 447, Tests Nos 2 and 4      | -                         | Tab 6/3 |                                       |       |   |   |
|                                               |                                             |                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | (xii) resistivity                                                                                                                             | Clause 637                             | Tab 6/3                   | -       |                                       |       |   |   |
|                                               |                                             |                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | (xiii) redox potential                                                                                                                        | Clause 638                             | Tab 6/3                   | -       |                                       |       |   |   |
|                                               |                                             |                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | (xiv) organic content                                                                                                                         | BS 1377 : Part 3                       | -                         | Tab 6/3 |                                       |       |   |   |
|                                               |                                             |                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | (xv) microbial activity index                                                                                                                 | Table 6/3                              | -                         | Tab 6/3 |                                       |       |   |   |

**TABLE 6/1: (11/05) Acceptable Earthworks Materials: Classification and Compaction Requirements (See footnotes) (continued)**

| Class                                         | General Material Description | Typical Use                                          | Permitted Constituents (All Subject to Requirements of Clause 601 and Appendix 6/1)                                                                                                                                                            | Material Properties Required for Acceptability (In Addition to Requirements on Use of Fill Materials in Clause 601 and Testing in Clause 631) |                                                     |                           |                                        | Compaction Requirements in Clause 612                                                | Class |
|-----------------------------------------------|------------------------------|------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|---------------------------|----------------------------------------|--------------------------------------------------------------------------------------|-------|
|                                               |                              |                                                      |                                                                                                                                                                                                                                                | Property (See Exceptions in Previous Column)                                                                                                  | Defined and Tested in Accordance with:              | Acceptable Limits Within: |                                        |                                                                                      |       |
|                                               |                              |                                                      |                                                                                                                                                                                                                                                |                                                                                                                                               |                                                     | Lower                     | Upper                                  |                                                                                      |       |
| S E L E C T E D<br>G R A N U L A R<br>F I L L | Selected granular material   | Lower bedding for corrugated steel buried structures | Natural gravel, natural sand, crushed gravel, crushed rock, crushed concrete, well burnt colliery spoil or any combination thereof. None of these constituents shall include any argillaceous rock. Recycled aggregate except recycled asphalt | (i) grading                                                                                                                                   | BS 1377 : Part 2 (On-site)                          | Tab 6/2                   | Tab 6/2                                | End product 90% of maximum dry density of BS 1377 : Part 4 (Vibrating hammer method) | 6     |
|                                               |                              |                                                      |                                                                                                                                                                                                                                                | (ii) uniformity coefficient                                                                                                                   | See Note 5                                          | 5                         | -                                      |                                                                                      |       |
|                                               |                              |                                                      |                                                                                                                                                                                                                                                | (iii) plasticity index                                                                                                                        | BS 1377 : Part 2                                    | -                         | 6                                      |                                                                                      |       |
|                                               |                              |                                                      |                                                                                                                                                                                                                                                | (iv) optimum mc                                                                                                                               | BS 1377 : Part 4 (vibrating hammer method)          | -                         | -                                      |                                                                                      |       |
|                                               |                              |                                                      |                                                                                                                                                                                                                                                | (v) mc                                                                                                                                        | BS 1377 : Part 2                                    | Optimum mc -2%            | Optimum mc -1%                         |                                                                                      |       |
|                                               |                              |                                                      |                                                                                                                                                                                                                                                | (vi) MCV                                                                                                                                      | Clause 632                                          | App 6/1                   | App 6/1                                |                                                                                      |       |
|                                               |                              |                                                      |                                                                                                                                                                                                                                                | (vii) Los Angeles coefficient                                                                                                                 | Clause 635                                          | -                         | 40                                     |                                                                                      |       |
|                                               |                              |                                                      |                                                                                                                                                                                                                                                | (viii) resistivity                                                                                                                            | Clause 637                                          | 2000 ohm cm               | -                                      |                                                                                      |       |
|                                               |                              |                                                      |                                                                                                                                                                                                                                                | (ix) water soluble (W/S) sulfate content                                                                                                      | TRL Report 447, Test No. 1                          | -                         | 300 mg/l as SO <sub>4</sub>            |                                                                                      |       |
|                                               |                              |                                                      |                                                                                                                                                                                                                                                | (x) oxidisable sulfides (OS) content                                                                                                          | TRL Report 447, Tests Nos 2 and 4                   | -                         | 0.06% as SO <sub>4</sub>               |                                                                                      |       |
|                                               |                              |                                                      |                                                                                                                                                                                                                                                | (xi) chloride ion content                                                                                                                     | BS EN 1744-1                                        | -                         | 0.025%                                 |                                                                                      |       |
|                                               |                              |                                                      |                                                                                                                                                                                                                                                | (xii) pH value                                                                                                                                | BS 1377 : Part 3                                    | 6                         | 9                                      |                                                                                      |       |
|                                               |                              |                                                      |                                                                                                                                                                                                                                                | (xiii) sulfide and hydrogen sulfide                                                                                                           | Standard textbook of qualitative inorganic analysis | -                         | Rapid blackening of lead acetate paper |                                                                                      |       |

**TABLE 6/1: (11/05) Acceptable Earthworks Materials: Classification and Compaction Requirements (See footnotes) (continued)**

| Class                                   | General Material Description                | Typical Use                                          | Permitted Constituents (All Subject to Requirements of Clause 601 and Appendix 6/1)                                                                                                                                                            | Material Properties Required for Acceptability (In Addition to Requirements on Use of Fill Materials in Clause 601 and Testing in Clause 631) |                                        |                           |                             | Compaction Requirements in Clause 612 | Class |     |
|-----------------------------------------|---------------------------------------------|------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|---------------------------|-----------------------------|---------------------------------------|-------|-----|
|                                         |                                             |                                                      |                                                                                                                                                                                                                                                | Property (See Exceptions in Previous Column)                                                                                                  | Defined and Tested in Accordance with: | Acceptable Limits Within: |                             |                                       |       |     |
|                                         |                                             |                                                      |                                                                                                                                                                                                                                                |                                                                                                                                               |                                        | Lower                     | Upper                       |                                       |       |     |
| S F E I L L E L C T E D G R A N U L A R | Selected uniformly graded granular material | Upper bedding for corrugated steel buried structures | Natural gravel, natural sand, crushed gravel, crushed rock, crushed concrete, well burnt colliery spoil or any combination thereof. None of these constituents shall include any argillaceous rock. Recycled aggregate except recycled asphalt | (i) grading                                                                                                                                   | BS 1377 : Part 2 (On-site)             | Tab 6/2                   | Tab 6/2                     | None                                  | 6     | L - |
|                                         |                                             |                                                      |                                                                                                                                                                                                                                                |                                                                                                                                               | BS EN 933-2 (Off-site)                 | Tab 6/5                   | Tab 6/5                     |                                       |       |     |
|                                         |                                             |                                                      |                                                                                                                                                                                                                                                | (ii) resistivity                                                                                                                              | Clause 637                             | 2000 ohm cm               | -                           |                                       |       |     |
|                                         |                                             |                                                      |                                                                                                                                                                                                                                                | (iii) water soluble (WS) sulfate content                                                                                                      | TRL Report 447, Test No. 1             | -                         | 300 mg/l as SO <sub>4</sub> |                                       |       |     |
|                                         |                                             |                                                      |                                                                                                                                                                                                                                                | (iv) oxidisable sulfides (OS) content                                                                                                         | TRL Report 447, Tests Nos. 2 and 4     | -                         | 0.06% as SO <sub>4</sub>    |                                       |       |     |
|                                         |                                             |                                                      |                                                                                                                                                                                                                                                | (v) chloride ion content                                                                                                                      | BS EN 1744-1                           | -                         | 0.025%                      |                                       |       |     |
|                                         |                                             |                                                      |                                                                                                                                                                                                                                                | (vi) pH value                                                                                                                                 | BS 1377 : Part 3                       | 6                         | 9                           |                                       |       |     |
|                                         | (vii) sulfide and hydrogen sulfide          | Standard textbook of qualitative inorganic analysis  | -                                                                                                                                                                                                                                              | Rapid blackening of lead acetate paper                                                                                                        |                                        |                           |                             |                                       |       |     |

TABLE 6/1: (11/05) Acceptable Earthworks Materials: Classification and Compaction Requirements (See footnotes) (continued)

| Class                                         | General Material Description | Typical Use                                    | Permitted Constituents (All Subject to Requirements of Clause 601 and Appendix 6/1)                                                                                                                                                            | Material Properties Required for Acceptability (In Addition to Requirements on Use of Fill Materials in Clause 601 and Testing in Clause 631) |                                                     |                           |                                        | Compaction Requirements in Clause 612                                                                                   | Class |   |   |
|-----------------------------------------------|------------------------------|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|---------------------------|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------|-------|---|---|
|                                               |                              |                                                |                                                                                                                                                                                                                                                | Property (See Exceptions in Previous Column)                                                                                                  | Defined and Tested in Accordance with:              | Acceptable Limits Within: |                                        |                                                                                                                         | 6     | M | - |
|                                               |                              |                                                |                                                                                                                                                                                                                                                |                                                                                                                                               |                                                     | Lower                     | Upper                                  |                                                                                                                         |       |   |   |
| S E L E C T E D<br>G R A N U L A R<br>F I L L | Selected granular material   | Surround to corrugated steel buried structures | Natural gravel, natural sand, crushed gravel, crushed rock, crushed concrete, well burnt colliery spoil or any combination thereof. None of these constituents shall include any argillaceous rock. Recycled aggregate except recycled asphalt | (i) grading                                                                                                                                   | BS 1377 : Part 2 (On-site)                          | Tab 6/2                   | Tab 6/2                                | End product 90% of maximum dry density of BS 1377 : Part 4 (Vibrating hammer method) unless otherwise stated in App 6/1 |       |   |   |
|                                               |                              |                                                |                                                                                                                                                                                                                                                |                                                                                                                                               | BS EN 933-2 (Off-site)                              | Tab 6/5                   | Tab 6/5                                |                                                                                                                         |       |   |   |
|                                               |                              |                                                |                                                                                                                                                                                                                                                | (ii) uniformity coefficient                                                                                                                   | See Note 5                                          | 5                         | -                                      |                                                                                                                         |       |   |   |
|                                               |                              |                                                |                                                                                                                                                                                                                                                | (iii) plasticity index                                                                                                                        | BS 1377 : Part 2                                    | -                         | 6                                      |                                                                                                                         |       |   |   |
|                                               |                              |                                                |                                                                                                                                                                                                                                                | (iv) optimum mc                                                                                                                               | BS 1377 : Part 4 (vibrating hammer method)          | -                         | -                                      |                                                                                                                         |       |   |   |
|                                               |                              |                                                |                                                                                                                                                                                                                                                | (v) mc                                                                                                                                        | BS 1377 : Part 2                                    | Optimum mc -2%            | Optimum mc -1%                         |                                                                                                                         |       |   |   |
|                                               |                              |                                                |                                                                                                                                                                                                                                                | (vi) MCV                                                                                                                                      | Clause 632                                          | App 6/1                   | App 6/1                                |                                                                                                                         |       |   |   |
|                                               |                              |                                                |                                                                                                                                                                                                                                                | (vii) Los Angeles coefficient                                                                                                                 | Clause 635                                          | -                         | 40                                     |                                                                                                                         |       |   |   |
|                                               |                              |                                                |                                                                                                                                                                                                                                                | (viii) resistivity                                                                                                                            | Clause 637                                          | 2000 ohm cm               | -                                      |                                                                                                                         |       |   |   |
|                                               |                              |                                                |                                                                                                                                                                                                                                                | (ix) water soluble (WS) sulfate content                                                                                                       | IRL Report 447 Test No. 1                           | -                         | 300 mg/l as SO <sub>4</sub>            |                                                                                                                         |       |   |   |
|                                               |                              |                                                |                                                                                                                                                                                                                                                | (x) oxidisable sulfides (OS) content                                                                                                          | TRI Report 447 Tests Nos. 2 and 4                   | -                         | 0.06% as SO <sub>4</sub>               |                                                                                                                         |       |   |   |
|                                               |                              |                                                |                                                                                                                                                                                                                                                | (xi) chloride ion content                                                                                                                     | BS EN 1744-1                                        | -                         | 0.025%                                 |                                                                                                                         |       |   |   |
|                                               |                              |                                                |                                                                                                                                                                                                                                                | (xii) pH value                                                                                                                                | BS 1377 : Part 3                                    | 6                         | 9                                      |                                                                                                                         |       |   |   |
|                                               |                              |                                                |                                                                                                                                                                                                                                                | (xiii) sulfide and hydrogen sulfide                                                                                                           | Standard textbook of qualitative inorganic analysis | -                         | Rapid blackening of lead acetate paper |                                                                                                                         |       |   |   |

**TABLE 6/1: (11/05) Acceptable Earthworks Materials: Classification and Compaction Requirements (See footnotes) (continued)**

| Class                               | General Material Description           | Typical Use        | Permitted Constituents (All Subject to Requirements of Clause 601 and Appendix 6/1)                                                                                                                                                                  | Material Properties Required for Acceptability (In Addition to Requirements on Use of Fill Materials in Clause 601 and Testing in Clause 631) |                                        |                           |         | Compaction Requirements in Clause 612                                                 | Class       |
|-------------------------------------|----------------------------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|---------------------------|---------|---------------------------------------------------------------------------------------|-------------|
|                                     |                                        |                    |                                                                                                                                                                                                                                                      | Property (See Exceptions in Previous Column)                                                                                                  | Defined and Tested in Accordance with: | Acceptable Limits Within: |         |                                                                                       |             |
|                                     |                                        |                    |                                                                                                                                                                                                                                                      |                                                                                                                                               |                                        | Lower                     | Upper   |                                                                                       |             |
| S F I L L E C T E D G R A N U L A R | Selected well graded granular material | Fill to structures | Natural gravel, natural sand, crushed gravel, crushed rock, crushed concrete, slag, well burnt colliery spoil or any combination thereof. None of these constituents shall include any argillaceous rock. Recycled aggregate except recycled asphalt | (i) grading                                                                                                                                   | BS 1377 : Part 2 (On-site)             | Tab 6/2                   | Tab 6/2 | Find product 95% of maximum dry density of BS 1377 : Part 4 (vibrating hammer method) | 6<br>N<br>- |
|                                     |                                        |                    |                                                                                                                                                                                                                                                      |                                                                                                                                               | BS EN 933:2 (Off-site)                 | Tab 6/5                   | Tab 6/5 |                                                                                       |             |
|                                     |                                        |                    |                                                                                                                                                                                                                                                      | (ii) uniformity coefficient                                                                                                                   | See Note 5                             | 10                        | -       |                                                                                       |             |
|                                     |                                        |                    |                                                                                                                                                                                                                                                      | (iii) Los Angeles coefficient                                                                                                                 | Clause 635                             | -                         | 40      |                                                                                       |             |
|                                     |                                        |                    |                                                                                                                                                                                                                                                      | (iv) undrained shear parameters (c and $\phi$ )                                                                                               | Clause 633                             | App 6/1                   | -       |                                                                                       |             |
|                                     |                                        |                    |                                                                                                                                                                                                                                                      | (v) effective angle of internal friction ( $\phi'$ ) and effective cohesion (c')                                                              | Clause 636                             | App 6/1                   | -       |                                                                                       |             |
|                                     |                                        |                    |                                                                                                                                                                                                                                                      | (vi) permeability                                                                                                                             | Clause 640                             | App 6/1                   | -       |                                                                                       |             |
|                                     |                                        |                    |                                                                                                                                                                                                                                                      | (vii) $m_c$                                                                                                                                   | BS 1377 : Part 2                       | App 6/1                   | App 6/1 |                                                                                       |             |
|                                     |                                        |                    |                                                                                                                                                                                                                                                      | (viii) MCV                                                                                                                                    | Clause 632                             | App 6/1                   | App 6/1 |                                                                                       |             |
|                                     |                                        |                    |                                                                                                                                                                                                                                                      | (ix) slope stability test (where required in App 6/6)                                                                                         | Clause 610                             | App 6/6                   |         |                                                                                       |             |

**TABLE 6/1: (11/05) Acceptable Earthworks Materials: Classification and Compaction Requirements (See footnotes) (continued)**

| Class                         | General Material Description                         | Typical Use        | Permitted Constituents (All Subject to Requirements of Clause 601 and Appendix 6/1)                                                                                                                                                                                                                                                  | Material Properties Required for Acceptability (In Addition to Requirements on Use of Fill Materials in Clause 601 and Testing in Clause 631) |                                        |                           |         | Compaction Requirements in Clause 612                                                 | Class |   |
|-------------------------------|------------------------------------------------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|---------------------------|---------|---------------------------------------------------------------------------------------|-------|---|
|                               |                                                      |                    |                                                                                                                                                                                                                                                                                                                                      | Property (See Exceptions in Previous Column)                                                                                                  | Defined and Tested in Accordance with: | Acceptable Limits Within: |         |                                                                                       | 6     | P |
|                               |                                                      |                    |                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                               |                                        | Lower                     | Upper   |                                                                                       |       |   |
| SELF COMPACTING GRANULAR FILL | Selected granular material                           | Fill to structures | Natural gravel, natural sand, crushed gravel, crushed rock, crushed concrete, slag, chalk, well burnt colliery spoil or any combination thereof. None of these constituents shall include any argillaceous rock. (Properties (i), (ii) and (ix) in next column shall not apply to chalk.) Recycled aggregate except recycled asphalt | (i) grading                                                                                                                                   | BS 1377 : Part 2 (On-site)             | Tab 6/2                   | Tab 6/2 | Find product 95% of maximum dry density of BS 1377 : Part 4 (vibrating hammer method) | 6     | P |
|                               |                                                      |                    |                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                               | BS EN 933-2 (Off-site)                 | Tab 6/5                   | Tab 6/5 |                                                                                       |       |   |
|                               |                                                      |                    |                                                                                                                                                                                                                                                                                                                                      | (ii) uniformity coefficient                                                                                                                   | See Note 5                             | 5                         | -       |                                                                                       |       |   |
|                               |                                                      |                    |                                                                                                                                                                                                                                                                                                                                      | (iii) IDD of chalk                                                                                                                            | Clause 634                             | -                         | App 6/1 |                                                                                       |       |   |
|                               |                                                      |                    |                                                                                                                                                                                                                                                                                                                                      | (iv) Los Angeles coefficient                                                                                                                  | Clause 635                             | -                         | 60      |                                                                                       |       |   |
|                               |                                                      |                    |                                                                                                                                                                                                                                                                                                                                      | (v) undrained shear parameters (c and $\phi$ )                                                                                                | Clause 633                             | App 6/1                   | -       |                                                                                       |       |   |
|                               |                                                      |                    |                                                                                                                                                                                                                                                                                                                                      | (vi) effective angle of internal friction ( $\phi'$ ) and effective cohesion (c')                                                             | Clause 636                             | App 6/1                   | -       |                                                                                       |       |   |
|                               |                                                      |                    |                                                                                                                                                                                                                                                                                                                                      | (vii) permeability                                                                                                                            | Clause 640                             | App 6/1                   | -       |                                                                                       |       |   |
|                               |                                                      |                    |                                                                                                                                                                                                                                                                                                                                      | (viii) mc                                                                                                                                     | BS 1377 : Part 2                       | App 6/1                   | App 6/1 |                                                                                       |       |   |
|                               |                                                      |                    |                                                                                                                                                                                                                                                                                                                                      | (ix) MCV                                                                                                                                      | Clause 632                             | App 6/1                   | App 6/1 |                                                                                       |       |   |
|                               | (x) slope stability test (where required in Ann 6/6) | Clause 610         | App 6/6                                                                                                                                                                                                                                                                                                                              |                                                                                                                                               |                                        |                           |         |                                                                                       |       |   |

**TABLE 6/1: (11/08) Acceptable Earthworks Materials: Classification and Compaction Requirements (See footnotes) (continued)**

| Class                                   | General Material Description                                | Typical Use                                                       | Permitted Constituents (All Subject to Requirements of Clause 601 and Appendix 6/1)                                                                                            | Material Properties Required for Acceptability (In Addition to Requirements on Use of Fill Materials in Clause 601 and Testing in Clause 631)                                  |                                                     |                            |                                        |                | Compaction Requirements in Clause 612 | Class |   |   |
|-----------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|----------------------------|----------------------------------------|----------------|---------------------------------------|-------|---|---|
|                                         |                                                             |                                                                   |                                                                                                                                                                                | Property (See Exceptions in Previous Column)                                                                                                                                   | Defined and Tested in Accordance with:              | Acceptable Limits Within:  |                                        |                |                                       |       |   |   |
|                                         |                                                             |                                                                   |                                                                                                                                                                                |                                                                                                                                                                                |                                                     | Lower                      | Upper                                  |                |                                       |       |   |   |
| S E L E C T E D G R A N U L A R F I L L | Well graded or uniformly graded or coarse granular material | Overlying fill for corrugated steel buried structures             | As Class 1A, 1B or 1C granular fill materials, but not to include argillaceous rock, slag or PFA in any proportions. Recycled aggregate except recycled asphalt                | As for Class 1A, 1B or 1C with the addition of the following:                                                                                                                  |                                                     |                            |                                        |                | 6                                     | Q     | - |   |
|                                         |                                                             |                                                                   |                                                                                                                                                                                | (i) water soluble (WS) sulfate content                                                                                                                                         | TRL Report 447, Test No. 1                          | -                          | 300 mg/l as SO <sub>4</sub>            |                |                                       |       |   |   |
|                                         |                                                             |                                                                   |                                                                                                                                                                                | (ii) oxidisable sulfides (OS) content                                                                                                                                          | TRL Report 447, Tests Nos. 2 and 4                  | -                          | 0.06% as SO <sub>4</sub>               |                |                                       |       |   |   |
|                                         |                                                             |                                                                   |                                                                                                                                                                                | (iii) chloride ion content                                                                                                                                                     | BS EN 1744-1                                        | -                          | 0.025%                                 |                |                                       |       |   |   |
|                                         |                                                             |                                                                   |                                                                                                                                                                                | (iv) pH value                                                                                                                                                                  | BS 1377 : Part 3                                    | 6                          | 9                                      |                |                                       |       |   |   |
|                                         |                                                             |                                                                   |                                                                                                                                                                                | (v) sulfide and hydrogen sulfide                                                                                                                                               | Standard textbook of qualitative inorganic analysis | -                          | Rapid blackening of lead acetate paper |                |                                       |       |   |   |
|                                         | 6                                                           | Selected granular material                                        | For stabilisation with lime and cement to form capping (Class 9F)                                                                                                              | Any material, or combination of materials, other than unburnt colliery spoil and argillaceous rock. (Properties (i), (ii) and (iii) in text column, shall not apply to chalk.) | (i) grading                                         | BS 1377 : Part 2 (On-site) | Tab 6/2                                | Tab 6/2        | Not applicable                        | 6     | R | - |
|                                         |                                                             |                                                                   |                                                                                                                                                                                |                                                                                                                                                                                | (ii) mc                                             | BS EN 933-2 (Off-site)     | Tab 6/5                                | Tab 6/5        |                                       |       |   |   |
|                                         |                                                             |                                                                   |                                                                                                                                                                                |                                                                                                                                                                                | (iii) liquid limit                                  | BS 1377 : Part 2           | App 6/1                                | -              |                                       |       |   |   |
|                                         |                                                             |                                                                   |                                                                                                                                                                                |                                                                                                                                                                                | (iv) plasticity index                               | BS 1377 : Part 2           | -                                      | 45             |                                       |       |   |   |
| 6                                       | Selected granular material                                  | For stabilisation with lime and cement to form capping (Class 9F) | Any material, or combination of materials, other than unburnt colliery spoil and argillaceous rock. (Properties (i), (ii) and (iii) in text column, shall not apply to chalk.) | (v) organic matter                                                                                                                                                             | BS 1377 : Part 2                                    | -                          | 20                                     | Not applicable | 6                                     | R     | - |   |
|                                         |                                                             |                                                                   |                                                                                                                                                                                | (vi) water soluble (WS) sulfate content                                                                                                                                        | BS 1377 : Part 3                                    | -                          | App 6/1                                |                |                                       |       |   |   |
|                                         |                                                             |                                                                   |                                                                                                                                                                                | (vii) oxidisable sulfides (OS) content                                                                                                                                         | TRL Report 447, Test No. 1                          | -                          | 3000 mg/l as SO <sub>4</sub>           |                |                                       |       |   |   |
|                                         |                                                             |                                                                   |                                                                                                                                                                                | (viii) IDD of chalk                                                                                                                                                            | TRL Report 447, Tests Nos. 2 and 4                  | -                          | 0.6% as SO <sub>4</sub>                |                |                                       |       |   |   |

TABLE 6/1: (11/05) Acceptable Earthworks Materials: Classification and Compaction Requirements (See footnotes) (continued)

| Class                                 | General Material Description           | Typical Use                | Permitted Constituents (All Subject to Requirements of Clause 601 and Appendix 6/1) | Material Properties Required for Acceptability (In Addition to Requirements on Use of Fill Materials in Clause 601 and Testing in Clause 631) |                                        |                           |             | Compaction Requirements in Clause 612 | Class |
|---------------------------------------|----------------------------------------|----------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|---------------------------|-------------|---------------------------------------|-------|
|                                       |                                        |                            |                                                                                     | Property (See Exceptions in Previous Column)                                                                                                  | Defined and Tested in Accordance with: | Acceptable Limits Within: |             |                                       |       |
|                                       |                                        |                            |                                                                                     |                                                                                                                                               |                                        | Lower                     | Upper       |                                       |       |
| 6                                     | Selected well graded granular material | Filter layer below subbase | Crushed rock or sand                                                                | (i) grading                                                                                                                                   | BS 1377 : Part 2 (On-site)             | Tab 6/2                   | Tab 6/2     | -                                     | 6     |
| S                                     |                                        |                            |                                                                                     |                                                                                                                                               | BS EN 933-2 (Off-site)                 | Tab 6/5                   | Tab 6/5     |                                       | S     |
| E L E C T E D G R A N U L A R F I L L |                                        |                            |                                                                                     | (ii) plasticity index                                                                                                                         | BS 1377 : Part 2                       | -                         | Non-plastic |                                       | -     |

**TABLE 6/1: (11/05) Acceptable Earthworks Materials: Classification and Compaction Requirements (See footnotes) (continued)**

| Class                                                                                    | General Material Description | Typical Use        | Permitted Constituents (All Subject to Requirements of Clause 601 and Appendix 6/1)                                                                                                                                                                                                                                                                                                 | Material Properties Required for Acceptability (In Addition to Requirements on Use of Fill Materials in Clause 601 and Testing in Clause 631) |                                        |                           |         | Compaction Requirements in Clause 612                                                                                                                                           | Class |
|------------------------------------------------------------------------------------------|------------------------------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|---------------------------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
|                                                                                          |                              |                    |                                                                                                                                                                                                                                                                                                                                                                                     | Property (See Exceptions in Previous Column)                                                                                                  | Defined and Tested in Accordance with: | Acceptable Limits Within: |         |                                                                                                                                                                                 |       |
| S F<br>E I<br>L L<br>E L<br>C<br>T<br>E<br>D<br><br>C<br>O<br>H<br>E<br>S<br>I<br>V<br>E | Selected cohesive material   | Fill to structures | Any material or combination of materials, other than argillaceous rock and materials designated as Class 3 in the Contract. If chalk is used it shall form 100% of constituents. (Properties (i) and (iii) shall not apply to chalk.) (Properties (vii) and (viii) may be increased to 54% and 31% respectively for Lias Clay only and subject to the requirements of Appendix 6/6) | (i) grading                                                                                                                                   | BS 1377 : Part 2                       | Tab 6/2                   | Tab 6/2 | End product: 100% of maximum dry density of BS 1377 : Part 4 (2.5 kg rammer method) or a dry density corresponding to 5% air voids at field moisture content whichever is lower | 7     |
|                                                                                          |                              |                    |                                                                                                                                                                                                                                                                                                                                                                                     | (ii) mc                                                                                                                                       | BS 1377 : Part 2                       | App 6/1                   | App 6/1 |                                                                                                                                                                                 | A     |
|                                                                                          |                              |                    |                                                                                                                                                                                                                                                                                                                                                                                     | (iii) MCV                                                                                                                                     | Clause 632                             | App 6/1                   | App 6/1 |                                                                                                                                                                                 |       |
|                                                                                          |                              |                    |                                                                                                                                                                                                                                                                                                                                                                                     | (iv) undrained shear parameters (c and $\phi$ )                                                                                               | Clause 633                             | App 6/1                   | App 6/1 |                                                                                                                                                                                 |       |
|                                                                                          |                              |                    |                                                                                                                                                                                                                                                                                                                                                                                     | (v) effective angle of internal friction ( $\phi'$ ) and effective cohesion ( $c'$ )                                                          | Clause 636                             | App 6/1                   | App 6/1 |                                                                                                                                                                                 |       |
|                                                                                          |                              |                    |                                                                                                                                                                                                                                                                                                                                                                                     | (vi) IDD of chalk                                                                                                                             | Clause 634                             | App 6/1                   | App 6/1 |                                                                                                                                                                                 |       |
|                                                                                          |                              |                    |                                                                                                                                                                                                                                                                                                                                                                                     | (vii) liquid limit                                                                                                                            | BS 1377 : Part 2                       | -                         | 45      |                                                                                                                                                                                 |       |
|                                                                                          |                              |                    |                                                                                                                                                                                                                                                                                                                                                                                     | (viii) plasticity index                                                                                                                       | BS 1377 : Part 2                       | -                         | 25      |                                                                                                                                                                                 |       |

TABLE 6/1: Acceptable Earthworks Materials: Classification and Compaction Requirements (See footnotes) (continued)

| Class                                   | General Material Description                               | Typical Use                               | Permitted Constituents (All Subject to Requirements of Clause 601 and Appendix 6/1)                                              | Material Properties Required for Acceptability (In Addition to Requirements on Use of Fill Materials in Clause 601 and Testing in Clause 631) |                                        |                                    |         | Compaction Requirements in Clause 612                                                | Class |
|-----------------------------------------|------------------------------------------------------------|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|------------------------------------|---------|--------------------------------------------------------------------------------------|-------|
|                                         |                                                            |                                           |                                                                                                                                  | Property (See Exceptions in Previous Column)                                                                                                  | Defined and Tested in Accordance with: | Acceptable Limits Within:          |         |                                                                                      |       |
|                                         |                                                            |                                           |                                                                                                                                  |                                                                                                                                               |                                        | Lower                              | Upper   |                                                                                      |       |
| S F E I L L E L C T E D C O H E S I V E | Selected conditioned pulverised fuel ash cohesive material | Fill to structures and to reinforced soil | Conditioned material direct from power station dust collection system and to which a controlled quantity of water has been added | (i) mc                                                                                                                                        | BS 1377 : Part 2                       | To enable compaction to Clause 612 |         | Final product: 95% of maximum dry density of BS 1377 : Part 4 (2.5 kg rammer method) | 7     |
|                                         |                                                            |                                           |                                                                                                                                  | (ii) bulk density                                                                                                                             | BS 1377 : Part 9                       | App 6/1                            | App 6/1 |                                                                                      | B     |
|                                         |                                                            |                                           |                                                                                                                                  | (iii) undrained shear parameters (c and $\phi$ )                                                                                              | Clause 633                             | App 6/1                            | -       |                                                                                      |       |
|                                         |                                                            |                                           |                                                                                                                                  | (iv) effective angle of internal friction ( $\phi'$ ) and effective cohesion ( $c'$ )                                                         | Clause 636                             | App 6/1                            | -       |                                                                                      |       |
|                                         |                                                            |                                           |                                                                                                                                  | (v) coefficient of friction and adhesion (fill elements)                                                                                      | Clause 639                             | App 6/1                            | -       |                                                                                      |       |
|                                         |                                                            |                                           |                                                                                                                                  | (vi) permeability                                                                                                                             | Clause 640                             | App 6/1                            | -       |                                                                                      |       |
|                                         |                                                            |                                           |                                                                                                                                  | (vii) slope stability test (where required in App 6/6)                                                                                        | Clause 610                             | App 6/6                            |         |                                                                                      |       |

**TABLE 6/1: (05/04) Acceptable Earthworks Materials: Classification and Compaction Requirements (See footnotes) (continued)**

| Class                                                                                 | General Material Description           | Typical Use               | Permitted Constituents (All Subject to Requirements of Clause 601 and Appendix 6/1)                                                                                                                                                                        | Material Properties Required for Acceptability (In Addition to Requirements on Use of Fill Materials in Clause 601 and Testing in Clause 631)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Compaction Requirements in Clause 612        | Class                                  |                           |  |       |       |             |                  |         |         |         |                  |         |         |           |            |         |         |                                                                                       |            |         |   |                                                          |            |         |   |                   |                  |   |    |                        |                  |   |    |                  |                  |         |         |                           |              |   |         |                                        |                            |   |         |                                       |                                    |   |         |                   |            |         |   |  |  |         |   |                  |   |   |
|---------------------------------------------------------------------------------------|----------------------------------------|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|----------------------------------------|---------------------------|--|-------|-------|-------------|------------------|---------|---------|---------|------------------|---------|---------|-----------|------------|---------|---------|---------------------------------------------------------------------------------------|------------|---------|---|----------------------------------------------------------|------------|---------|---|-------------------|------------------|---|----|------------------------|------------------|---|----|------------------|------------------|---------|---------|---------------------------|--------------|---|---------|----------------------------------------|----------------------------|---|---------|---------------------------------------|------------------------------------|---|---------|-------------------|------------|---------|---|--|--|---------|---|------------------|---|---|
|                                                                                       |                                        |                           |                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                              | 7                                      | C                         |  |       |       |             |                  |         |         |         |                  |         |         |           |            |         |         |                                                                                       |            |         |   |                                                          |            |         |   |                   |                  |   |    |                        |                  |   |    |                  |                  |         |         |                           |              |   |         |                                        |                            |   |         |                                       |                                    |   |         |                   |            |         |   |  |  |         |   |                  |   |   |
| S F L E C T E D C O H F S I V E F I L L                                               | Selected wet cohesive material         | Fill to reinforced soil   | Any material, or combination of materials, other than unburnt colliery spoil, argillaceous rock and chalk. (Properties (vii), (ix), (x), (xi) and (xii) in next column only apply when metallic reinforcing elements, facing units or fastenings are used) | <table><thead><tr><th rowspan="2">Property (See Exceptions in Previous Column)</th><th rowspan="2">Defined and Tested in Accordance with:</th><th colspan="2">Acceptable Limits Within:</th></tr><tr><th>Lower</th><th>Upper</th></tr></thead><tbody><tr><td>(i) grading</td><td>BS 1377 : Part 2</td><td>Tab 6/2</td><td>Tab 6/2</td></tr><tr><td>(ii) mc</td><td>BS 1377 : Part 2</td><td>App 6/1</td><td>App 6/1</td></tr><tr><td>(iii) MCV</td><td>Clause 632</td><td>App 6/1</td><td>App 6/1</td></tr><tr><td>(iv) effective angle of internal friction (<math>\phi'</math>) and effective cohesion (<math>c'</math>)</td><td>Clause 636</td><td>App 6/1</td><td>-</td></tr><tr><td>(v) coefficient of friction and adhesion (fill/clements)</td><td>Clause 639</td><td>App 6/1</td><td>-</td></tr><tr><td>(vi) liquid limit</td><td>BS 1377 : Part 2</td><td>-</td><td>45</td></tr><tr><td>(vii) plasticity index</td><td>BS 1377 : Part 2</td><td>-</td><td>25</td></tr><tr><td>(viii) p11 value</td><td>BS 1377 : Part 3</td><td>Tab 6/3</td><td>Tab 6/3</td></tr><tr><td>(ix) chloride ion content</td><td>BS EN 1744-1</td><td>-</td><td>Tab 6/3</td></tr><tr><td>(x) water soluble (WS) sulfate content</td><td>TRL Report 447, Test No. 1</td><td>-</td><td>Tab 6/3</td></tr><tr><td>(xi) oxidisable sulfides (OS) content</td><td>TRL Report 447, Tests Nos. 2 and 4</td><td>-</td><td>Tab 6/3</td></tr><tr><td>(xii) resistivity</td><td>Clause 637</td><td>Tab 6/3</td><td>-</td></tr><tr><td></td><td></td><td>Tab 6/3</td><td>-</td></tr></tbody></table> | Property (See Exceptions in Previous Column) | Defined and Tested in Accordance with: | Acceptable Limits Within: |  | Lower | Upper | (i) grading | BS 1377 : Part 2 | Tab 6/2 | Tab 6/2 | (ii) mc | BS 1377 : Part 2 | App 6/1 | App 6/1 | (iii) MCV | Clause 632 | App 6/1 | App 6/1 | (iv) effective angle of internal friction ( $\phi'$ ) and effective cohesion ( $c'$ ) | Clause 636 | App 6/1 | - | (v) coefficient of friction and adhesion (fill/clements) | Clause 639 | App 6/1 | - | (vi) liquid limit | BS 1377 : Part 2 | - | 45 | (vii) plasticity index | BS 1377 : Part 2 | - | 25 | (viii) p11 value | BS 1377 : Part 3 | Tab 6/3 | Tab 6/3 | (ix) chloride ion content | BS EN 1744-1 | - | Tab 6/3 | (x) water soluble (WS) sulfate content | TRL Report 447, Test No. 1 | - | Tab 6/3 | (xi) oxidisable sulfides (OS) content | TRL Report 447, Tests Nos. 2 and 4 | - | Tab 6/3 | (xii) resistivity | Clause 637 | Tab 6/3 | - |  |  | Tab 6/3 | - | Tab 6/4 Method 1 | 7 | C |
| Property (See Exceptions in Previous Column)                                          | Defined and Tested in Accordance with: | Acceptable Limits Within: |                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                              |                                        |                           |  |       |       |             |                  |         |         |         |                  |         |         |           |            |         |         |                                                                                       |            |         |   |                                                          |            |         |   |                   |                  |   |    |                        |                  |   |    |                  |                  |         |         |                           |              |   |         |                                        |                            |   |         |                                       |                                    |   |         |                   |            |         |   |  |  |         |   |                  |   |   |
|                                                                                       |                                        | Lower                     |                                                                                                                                                                                                                                                            | Upper                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                              |                                        |                           |  |       |       |             |                  |         |         |         |                  |         |         |           |            |         |         |                                                                                       |            |         |   |                                                          |            |         |   |                   |                  |   |    |                        |                  |   |    |                  |                  |         |         |                           |              |   |         |                                        |                            |   |         |                                       |                                    |   |         |                   |            |         |   |  |  |         |   |                  |   |   |
| (i) grading                                                                           | BS 1377 : Part 2                       | Tab 6/2                   |                                                                                                                                                                                                                                                            | Tab 6/2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                              |                                        |                           |  |       |       |             |                  |         |         |         |                  |         |         |           |            |         |         |                                                                                       |            |         |   |                                                          |            |         |   |                   |                  |   |    |                        |                  |   |    |                  |                  |         |         |                           |              |   |         |                                        |                            |   |         |                                       |                                    |   |         |                   |            |         |   |  |  |         |   |                  |   |   |
| (ii) mc                                                                               | BS 1377 : Part 2                       | App 6/1                   |                                                                                                                                                                                                                                                            | App 6/1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                              |                                        |                           |  |       |       |             |                  |         |         |         |                  |         |         |           |            |         |         |                                                                                       |            |         |   |                                                          |            |         |   |                   |                  |   |    |                        |                  |   |    |                  |                  |         |         |                           |              |   |         |                                        |                            |   |         |                                       |                                    |   |         |                   |            |         |   |  |  |         |   |                  |   |   |
| (iii) MCV                                                                             | Clause 632                             | App 6/1                   |                                                                                                                                                                                                                                                            | App 6/1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                              |                                        |                           |  |       |       |             |                  |         |         |         |                  |         |         |           |            |         |         |                                                                                       |            |         |   |                                                          |            |         |   |                   |                  |   |    |                        |                  |   |    |                  |                  |         |         |                           |              |   |         |                                        |                            |   |         |                                       |                                    |   |         |                   |            |         |   |  |  |         |   |                  |   |   |
| (iv) effective angle of internal friction ( $\phi'$ ) and effective cohesion ( $c'$ ) | Clause 636                             | App 6/1                   |                                                                                                                                                                                                                                                            | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                              |                                        |                           |  |       |       |             |                  |         |         |         |                  |         |         |           |            |         |         |                                                                                       |            |         |   |                                                          |            |         |   |                   |                  |   |    |                        |                  |   |    |                  |                  |         |         |                           |              |   |         |                                        |                            |   |         |                                       |                                    |   |         |                   |            |         |   |  |  |         |   |                  |   |   |
| (v) coefficient of friction and adhesion (fill/clements)                              | Clause 639                             | App 6/1                   |                                                                                                                                                                                                                                                            | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                              |                                        |                           |  |       |       |             |                  |         |         |         |                  |         |         |           |            |         |         |                                                                                       |            |         |   |                                                          |            |         |   |                   |                  |   |    |                        |                  |   |    |                  |                  |         |         |                           |              |   |         |                                        |                            |   |         |                                       |                                    |   |         |                   |            |         |   |  |  |         |   |                  |   |   |
| (vi) liquid limit                                                                     | BS 1377 : Part 2                       | -                         |                                                                                                                                                                                                                                                            | 45                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                              |                                        |                           |  |       |       |             |                  |         |         |         |                  |         |         |           |            |         |         |                                                                                       |            |         |   |                                                          |            |         |   |                   |                  |   |    |                        |                  |   |    |                  |                  |         |         |                           |              |   |         |                                        |                            |   |         |                                       |                                    |   |         |                   |            |         |   |  |  |         |   |                  |   |   |
| (vii) plasticity index                                                                | BS 1377 : Part 2                       | -                         |                                                                                                                                                                                                                                                            | 25                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                              |                                        |                           |  |       |       |             |                  |         |         |         |                  |         |         |           |            |         |         |                                                                                       |            |         |   |                                                          |            |         |   |                   |                  |   |    |                        |                  |   |    |                  |                  |         |         |                           |              |   |         |                                        |                            |   |         |                                       |                                    |   |         |                   |            |         |   |  |  |         |   |                  |   |   |
| (viii) p11 value                                                                      | BS 1377 : Part 3                       | Tab 6/3                   |                                                                                                                                                                                                                                                            | Tab 6/3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                              |                                        |                           |  |       |       |             |                  |         |         |         |                  |         |         |           |            |         |         |                                                                                       |            |         |   |                                                          |            |         |   |                   |                  |   |    |                        |                  |   |    |                  |                  |         |         |                           |              |   |         |                                        |                            |   |         |                                       |                                    |   |         |                   |            |         |   |  |  |         |   |                  |   |   |
| (ix) chloride ion content                                                             | BS EN 1744-1                           | -                         |                                                                                                                                                                                                                                                            | Tab 6/3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                              |                                        |                           |  |       |       |             |                  |         |         |         |                  |         |         |           |            |         |         |                                                                                       |            |         |   |                                                          |            |         |   |                   |                  |   |    |                        |                  |   |    |                  |                  |         |         |                           |              |   |         |                                        |                            |   |         |                                       |                                    |   |         |                   |            |         |   |  |  |         |   |                  |   |   |
| (x) water soluble (WS) sulfate content                                                | TRL Report 447, Test No. 1             | -                         |                                                                                                                                                                                                                                                            | Tab 6/3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                              |                                        |                           |  |       |       |             |                  |         |         |         |                  |         |         |           |            |         |         |                                                                                       |            |         |   |                                                          |            |         |   |                   |                  |   |    |                        |                  |   |    |                  |                  |         |         |                           |              |   |         |                                        |                            |   |         |                                       |                                    |   |         |                   |            |         |   |  |  |         |   |                  |   |   |
| (xi) oxidisable sulfides (OS) content                                                 | TRL Report 447, Tests Nos. 2 and 4     | -                         | Tab 6/3                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                              |                                        |                           |  |       |       |             |                  |         |         |         |                  |         |         |           |            |         |         |                                                                                       |            |         |   |                                                          |            |         |   |                   |                  |   |    |                        |                  |   |    |                  |                  |         |         |                           |              |   |         |                                        |                            |   |         |                                       |                                    |   |         |                   |            |         |   |  |  |         |   |                  |   |   |
| (xii) resistivity                                                                     | Clause 637                             | Tab 6/3                   | -                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                              |                                        |                           |  |       |       |             |                  |         |         |         |                  |         |         |           |            |         |         |                                                                                       |            |         |   |                                                          |            |         |   |                   |                  |   |    |                        |                  |   |    |                  |                  |         |         |                           |              |   |         |                                        |                            |   |         |                                       |                                    |   |         |                   |            |         |   |  |  |         |   |                  |   |   |
|                                                                                       |                                        | Tab 6/3                   | -                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                              |                                        |                           |  |       |       |             |                  |         |         |         |                  |         |         |           |            |         |         |                                                                                       |            |         |   |                                                          |            |         |   |                   |                  |   |    |                        |                  |   |    |                  |                  |         |         |                           |              |   |         |                                        |                            |   |         |                                       |                                    |   |         |                   |            |         |   |  |  |         |   |                  |   |   |

**TABLE 6/1: (05/04) Acceptable Earthworks Materials: Classification and Compaction Requirements (See footnotes) (continued)**

| Class                                   | General Material Description     | Typical Use             | Permitted Constituents (All Subject to Requirements of Clause 601 and Appendix 6/1)                                                                                                                                                                                      | Material Properties Required for Acceptability (In Addition to Requirements on Use of Fill Materials in Clause 601 and Testing in Clause 631) |                                        |                           |         | Compaction Requirements in Clause 612 | Class |   |
|-----------------------------------------|----------------------------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|---------------------------|---------|---------------------------------------|-------|---|
|                                         |                                  |                         |                                                                                                                                                                                                                                                                          | Property (See Exceptions in Previous Column)                                                                                                  | Defined and Tested in Accordance with: | Acceptable Limits Within: |         |                                       |       |   |
|                                         |                                  |                         |                                                                                                                                                                                                                                                                          |                                                                                                                                               |                                        | Lower                     | Upper   |                                       |       |   |
| S E L E C T E D C O H E S I V E F I L L | Selected stony cohesive material | Fill to reinforced soil | Any material, or combination of materials, other than unburnt colliery spoil, argillaceous rock and chalk. (Properties (vi), (vii), (viii), (ix), (x), (xi) and (xii) in next column only apply when metallic reinforcing elements, facing units or fastenings are used) | (i) grading                                                                                                                                   | BS 1377 : Part 2                       | Tab 6/2                   | Tab 6/2 | Tab 6/4 Method 2                      | 7     | D |
|                                         |                                  |                         |                                                                                                                                                                                                                                                                          | (ii) mc                                                                                                                                       | BS 1377 : Part 2                       | App 6/1                   | App 6/1 |                                       |       |   |
|                                         |                                  |                         |                                                                                                                                                                                                                                                                          | (iii) MCV                                                                                                                                     | Clause 632                             | App 6/1                   | App 6/1 |                                       |       |   |
|                                         |                                  |                         |                                                                                                                                                                                                                                                                          | (iv) effective angle of internal friction ( $\phi'$ ) and effective cohesion ( $c'$ )                                                         | Clause 636                             | App 6/1                   | -       |                                       |       |   |
|                                         |                                  |                         |                                                                                                                                                                                                                                                                          | (v) coefficient of friction and adhesion (fill elements)                                                                                      | Clause 639                             | App 6/1                   | -       |                                       |       |   |
|                                         |                                  |                         |                                                                                                                                                                                                                                                                          | (vi) liquid limit                                                                                                                             | BS 1377 : Part 2                       | -                         | 45      |                                       |       |   |
|                                         |                                  |                         |                                                                                                                                                                                                                                                                          | (vii) plasticity index                                                                                                                        | BS 1377 : Part 2                       | -                         | 25      |                                       |       |   |
|                                         |                                  |                         |                                                                                                                                                                                                                                                                          | (viii) pI1 value                                                                                                                              | BS 1377 : Part 3                       | Tab 6/3                   | Tab 6/3 |                                       |       |   |
|                                         |                                  |                         |                                                                                                                                                                                                                                                                          | (ix) chloride ion content                                                                                                                     | BS EN 1744-1                           | -                         | Tab 6/3 |                                       |       |   |
|                                         |                                  |                         |                                                                                                                                                                                                                                                                          | (x) water soluble (WS) sulfate content                                                                                                        | TRL Report 447, Test No. 1             | -                         | Tab 6/3 |                                       |       |   |
|                                         |                                  |                         |                                                                                                                                                                                                                                                                          | (xi) oxidisable sulfides (OS) content                                                                                                         | TRL Report 447, Tests Nos. 2 and 4     | -                         | Tab 6/3 |                                       |       |   |
|                                         |                                  |                         |                                                                                                                                                                                                                                                                          | (xii) resistivity                                                                                                                             | Clause 637                             | Tab 6/3                   | -       |                                       |       |   |
|                                         |                                  |                         |                                                                                                                                                                                                                                                                          | (xiii) redox potential                                                                                                                        | Clause 638                             | Tab 6/3                   | -       |                                       |       |   |

**TABLE 6/1: (11/03) Acceptable Earthworks Materials: Classification and Compaction Requirements (See footnotes) (continued)**

| Class                           | General Material Description     | Typical Use                                              | Permitted Constituents (All Subject to Requirements of Clause 601 and Appendix 6/1)                       | Material Properties Required for Acceptability (In Addition to Requirements on Use of Fill Materials in Clause 601 and Testing in Clause 631) |                                        |                           |         |                | Compaction Requirements in Clause 612 | Class |
|---------------------------------|----------------------------------|----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|---------------------------|---------|----------------|---------------------------------------|-------|
|                                 |                                  |                                                          |                                                                                                           | Property (See Exceptions in Previous Column)                                                                                                  | Defined and Tested in Accordance with: | Acceptable Limits Within: |         |                |                                       |       |
|                                 |                                  |                                                          |                                                                                                           |                                                                                                                                               |                                        | Lower                     | Upper   |                |                                       |       |
| S E L E C T E D C O H E S I V E | Selected cohesive material       | For stabilisation with lime to form capping (Class 9D)   | Any material, or combination of materials, other than unburnt colliery spoil                              | (i) grading                                                                                                                                   | BS 1377 : Part 2                       | Tab 6/2                   | Tab 6/2 | Not applicable | 7                                     | D     |
|                                 |                                  |                                                          |                                                                                                           | (ii) mc                                                                                                                                       | BS 1377 : Part 2                       | -                         | App 6/1 |                |                                       |       |
|                                 |                                  |                                                          |                                                                                                           | (iii) MCV                                                                                                                                     | Clause 632                             | App 6/1                   | -       |                |                                       |       |
|                                 |                                  |                                                          |                                                                                                           | (iv) plasticity index                                                                                                                         | BS 1377 : Part 2                       | 10                        | -       |                |                                       |       |
|                                 |                                  |                                                          |                                                                                                           | (v) organic matter                                                                                                                            | BS 1377 : Part 3                       | -                         | App 6/1 |                |                                       |       |
|                                 |                                  |                                                          |                                                                                                           | (vi) water soluble (WS) sulfate content                                                                                                       | TRL Report 447, Test No. 1             | -                         | App 6/1 |                |                                       |       |
|                                 |                                  |                                                          |                                                                                                           | (vii) oxidisable sulfides (OS) content                                                                                                        | TRL Report 447, Tests Nos. 2 and 4     | -                         | App 6/1 |                |                                       |       |
|                                 |                                  |                                                          |                                                                                                           | (viii) total potential sulfate (TPS) content                                                                                                  | TRL Report 447, Test No. 4             | -                         | App 6/1 |                |                                       |       |
| F I L L                         | Selected silty cohesive material | For stabilisation with cement to form capping (Class 9F) | Any material, or combination of materials, other than chalk, unburnt colliery spoil and argillaceous rock | (i) grading                                                                                                                                   | BS 1377 : Part 2                       | Tab 6/2                   | Tab 6/2 | Not applicable | 7                                     | F     |
|                                 |                                  |                                                          |                                                                                                           | (ii) uniformity coefficient                                                                                                                   | See Note 5                             | 5                         | -       |                |                                       |       |
|                                 |                                  |                                                          |                                                                                                           | (iii) mc                                                                                                                                      | BS 1377 : Part 2                       | App 6/1                   | App 6/1 |                |                                       |       |
|                                 |                                  |                                                          |                                                                                                           | (iv) MCV                                                                                                                                      | Clause 632                             | App 6/1                   | App 6/1 |                |                                       |       |
|                                 |                                  |                                                          |                                                                                                           | (v) liquid limit                                                                                                                              | BS 1377 : Part 2                       | -                         | 45      |                |                                       |       |
|                                 |                                  |                                                          |                                                                                                           | (vi) plasticity index                                                                                                                         | BS 1377 : Part 2                       | -                         | 20      |                |                                       |       |
|                                 |                                  |                                                          |                                                                                                           | (vii) organic matter                                                                                                                          | BS 1377 : Part 3                       | -                         | App 6/1 |                |                                       |       |
|                                 |                                  |                                                          |                                                                                                           | (viii) water soluble (WS) sulfate content                                                                                                     | TRL Report 447, Test No. 1             | -                         | App 6/1 |                |                                       |       |
|                                 |                                  |                                                          |                                                                                                           | (ix) oxidisable sulfides (OS) content                                                                                                         | TRL Report 447, Tests Nos. 2 and 4     | -                         | App 6/1 |                |                                       |       |
|                                 |                                  |                                                          |                                                                                                           | (x) total potential sulfate (TPS) content                                                                                                     | TRL Report 447, Test No. 4             | -                         | App 6/1 |                |                                       |       |
|                                 |                                  |                                                          |                                                                                                           |                                                                                                                                               |                                        |                           |         |                |                                       |       |
|                                 |                                  |                                                          |                                                                                                           |                                                                                                                                               |                                        |                           |         |                |                                       |       |

**TABLE 6/1: (11/05) Acceptable Earthworks Materials: Classification and Compaction Requirements (See footnotes) (continued)**

| Class                                                                                            | General Material Description                               | Typical Use                                              | Permitted Constituents (All Subject to Requirements of Clause 601 and Appendix 6/1)                                                                                          | Material Properties Required for Acceptability (In Addition to Requirements on Use of Fill Materials in Clause 601 and Testing in Clause 631) |                                        |                           |                              |                | Compaction Requirements in Clause 612 | Class       |
|--------------------------------------------------------------------------------------------------|------------------------------------------------------------|----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|---------------------------|------------------------------|----------------|---------------------------------------|-------------|
|                                                                                                  |                                                            |                                                          |                                                                                                                                                                              | Property (See exceptions in Previous Column)                                                                                                  | Defined and Tested in Accordance with: | Acceptable Limits Within: |                              |                |                                       |             |
|                                                                                                  |                                                            |                                                          |                                                                                                                                                                              |                                                                                                                                               |                                        | Lower                     | Upper                        |                |                                       |             |
| S<br>E<br>L<br>E<br>C<br>T<br>E<br>D<br>C<br>O<br>H<br>E<br>S<br>I<br>V<br>E<br>F<br>I<br>L<br>L | Selected conditioned pulverised fuel ash cohesive material | For stabilisation with cement to form capping (Class 9C) | Conditioned material direct from power station dust collection system and to which a controlled quantity of water has been added                                             | (i) mc                                                                                                                                        | BS 1377 : Part 2                       | App 6.1                   | App 6/1                      | Not applicable | 7<br>G<br>-                           |             |
|                                                                                                  |                                                            |                                                          |                                                                                                                                                                              | (ii) water soluble (WS) sulfate content                                                                                                       | TRL Report 447, Test No. 1             | -                         | 3000 mg l as SO <sub>4</sub> |                |                                       |             |
|                                                                                                  |                                                            |                                                          |                                                                                                                                                                              | (iii) oxidisable sulfides (OS) content                                                                                                        | TRL Report 447, Tests Nos. 2 and 4     | -                         | 0.6% as SO <sub>2</sub>      |                |                                       |             |
|                                                                                                  |                                                            |                                                          |                                                                                                                                                                              | (iv) total potential sulfate (TPS) content                                                                                                    | TRL Report 447, Test No. 4             | -                         | 1.2% as SO <sub>4</sub>      |                |                                       |             |
| 7                                                                                                | Wet, dry, stony or silty cohesive material and chalk       | Overlying fill for corrugated steel buried structures    | As Class 2A, 2B, 2C, 2D general cohesive fill material or Class 3 chalk fill material, except that argillaceous rock, slag, PFA or any combination thereof shall not be used | As for Class 2A, 2B, 2C, 2D or 3 with the addition of the following                                                                           |                                        |                           |                              |                |                                       | 7<br>H<br>- |
| F<br>I<br>L<br>L                                                                                 |                                                            |                                                          |                                                                                                                                                                              | (i) water soluble (WS) sulfate content                                                                                                        | TRL Report 447, Test No. 1             | -                         | 300 mg l as SO <sub>2</sub>  |                |                                       |             |
|                                                                                                  |                                                            |                                                          |                                                                                                                                                                              | (ii) oxidisable sulfides (OS) content                                                                                                         | TRL Report 447, Tests Nos. 2 and 4     | -                         | 0.06% as SO <sub>2</sub>     |                |                                       |             |
|                                                                                                  |                                                            |                                                          |                                                                                                                                                                              | (iii) chloride ion content                                                                                                                    | BS EN 1744-1                           | -                         | 0.025%                       |                |                                       |             |
|                                                                                                  |                                                            |                                                          |                                                                                                                                                                              | (iv) pH value                                                                                                                                 | BS 1377 : Part 3                       | 6                         | 9                            |                |                                       |             |

**TABLE 6/1: (11/03) Acceptable Earthworks Materials: Classification and Compaction Requirements (See footnotes) (continued)**

| Class                                                                                                    | General Material Description | Typical Use                                                       | Permitted Constituents (All Subject to Requirements of Clause 601 and Appendix 6/1) | Material Properties Required for Acceptability (In Addition to Requirements on Use of Fill Materials in Clause 601 and Testing in Clause 631) |                                        |                           |         | Compaction Requirements in Clause 612 | Class |   |
|----------------------------------------------------------------------------------------------------------|------------------------------|-------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|---------------------------|---------|---------------------------------------|-------|---|
|                                                                                                          |                              |                                                                   |                                                                                     | Property (See exceptions in Previous Column)                                                                                                  | Defined and Tested in Accordance with: | Acceptable Limits Within: |         |                                       |       |   |
|                                                                                                          |                              |                                                                   |                                                                                     |                                                                                                                                               |                                        | Lower                     | Upper   |                                       |       |   |
| S<br>E<br>L<br>E<br>C<br>T<br>E<br>D<br><br>C<br>O<br>H<br>E<br>S<br>I<br>V<br>E<br><br>F<br>I<br>L<br>L | Selected cohesive material   | For stabilisation with lime and cement to form capping (Class 9F) | Any material, or combination of materials, other than unburnt colliery spoil        | (i) grading                                                                                                                                   | BS 1377 : Part 2                       | Tab 6/2                   | Tab 6/2 | Not applicable                        | 7     | 1 |
|                                                                                                          |                              |                                                                   |                                                                                     | (ii) mc                                                                                                                                       | BS 1377 : Part 2                       | -                         | App 6/1 |                                       |       |   |
|                                                                                                          |                              |                                                                   |                                                                                     | (iii) MCV                                                                                                                                     | Clause 632                             | App 6.1                   | -       |                                       |       |   |
|                                                                                                          |                              |                                                                   |                                                                                     | (iv) plasticity index                                                                                                                         | BS 1377 : Part 2                       | 10                        | -       |                                       |       |   |
|                                                                                                          |                              |                                                                   |                                                                                     | (v) organic matter                                                                                                                            | BS 1377 : Part 3                       | -                         | App 6/1 |                                       |       |   |
|                                                                                                          |                              |                                                                   |                                                                                     | (vi) water soluble (WS) sulfate content                                                                                                       | TRL Report 447, Test No. 1             | -                         | App 6/1 |                                       |       |   |
|                                                                                                          |                              |                                                                   |                                                                                     | (vii) oxidisable sulfides (OS) content                                                                                                        | TRL Report 447, Tests Nos. 2 and 4     | -                         | App 6/1 |                                       |       |   |
|                                                                                                          |                              |                                                                   |                                                                                     | (viii) total potential sulfate (TPS) content                                                                                                  | TRL Report 447, Test No. 4             | -                         | App 6/1 |                                       |       |   |

TABLE 6/1: Acceptable Earthworks Materials: Classification and Compaction Requirements (See footnotes) (continued)

| Class               | General Material Description | Typical Use       | Permitted Constituents (All Subject to Requirements of Clause 601 and Appendix 6/1)                    | Material Properties Required for Acceptability (In Addition to Requirements on Use of Fill Materials in Clause 601 and Testing in Clause 631) |                                        |                                    |         | Compaction Requirements in Clause 612 | Class                                                                             |   |
|---------------------|------------------------------|-------------------|--------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|------------------------------------|---------|---------------------------------------|-----------------------------------------------------------------------------------|---|
|                     |                              |                   |                                                                                                        | Property (See exceptions in Previous Column)                                                                                                  | Defined and Tested in Accordance with: | Acceptable Limits Within:          |         |                                       |                                                                                   |   |
|                     |                              |                   |                                                                                                        |                                                                                                                                               |                                        | Lower                              | Upper   |                                       |                                                                                   |   |
| M F I I S I C L     | -                            | Lower trench fill | Any; except there shall not be any stones or lumps of clay >40 mm nominal diameter. Recycled aggregate | (i) mc                                                                                                                                        | BS 1377 : Part 2                       | App 6.1                            | App 6/1 | Tab 6/4                               | 8                                                                                 | - |
|                     |                              |                   |                                                                                                        | (ii) MCV                                                                                                                                      | Clause 632                             | App 6.1                            | App 6/1 |                                       |                                                                                   |   |
|                     | 9                            | A                 | Capping                                                                                                | Class 6E with addition of cement according to Clause 614                                                                                      | (i) pulverisation                      | BS 1924 : Part 2                   | 60%     | -                                     | Tab 6/4 Method 6                                                                  | 9 |
| S T A B I L I S E D | -                            | Capping           | Class 7F with addition of cement according to Clause 614                                               | (ii) bearing ratio                                                                                                                            | BS 1924 : Part 2                       | App 6.1                            | -       |                                       |                                                                                   |   |
|                     |                              |                   |                                                                                                        | (iii) mc                                                                                                                                      | BS 1924 : Part 2                       | App 6.1                            | App 6/1 |                                       |                                                                                   |   |
|                     | 9                            | B                 |                                                                                                        |                                                                                                                                               | (i) pulverisation                      | BS 1924 : Part 2                   | App 6.1 | -                                     | Tab 6/4 Method 7                                                                  | 9 |
| M A T E R I A L S   | -                            | Capping           | Class 7G with addition of cement according to Clause 614                                               | (ii) MCV immediately before compaction                                                                                                        | Clause 632                             | App 6.1                            | 12      |                                       |                                                                                   |   |
|                     |                              |                   |                                                                                                        | (iii) bearing ratio                                                                                                                           | BS 1924 : Part 2                       | App 6.1                            | -       |                                       |                                                                                   |   |
|                     | 9                            | C                 |                                                                                                        |                                                                                                                                               | (iv) mc                                | BS 1924 : Part 2                   | App 6.1 | App 6/1                               | End product 95% of maximum dry density of BS 1924 : Part 2 (2.5 kg rammer method) | 9 |
| 9                   | D                            | Capping           | Class 7I with addition of lime according to Clause 615                                                 | (i) pulverisation                                                                                                                             | BS 1924 : Part 2                       | 60%                                | -       |                                       |                                                                                   |   |
|                     |                              |                   |                                                                                                        | (ii) bearing ratio                                                                                                                            | BS 1924 : Part 2                       | App 6.1                            | -       |                                       |                                                                                   |   |
|                     |                              |                   |                                                                                                        | (iii) mc                                                                                                                                      | BS 1924 : Part 2                       | To enable compaction to Clause 612 |         |                                       |                                                                                   |   |
|                     |                              |                   |                                                                                                        | (i) pulverisation                                                                                                                             | BS 1924 : Part 2                       | 30%                                | -       | Tab 6/4 Method 7                      | 9                                                                                 | D |
|                     |                              |                   |                                                                                                        | (ii) MCV immediately before compaction                                                                                                        | Clause 632                             | App 6.1                            | App 6/1 |                                       |                                                                                   |   |
|                     |                              |                   |                                                                                                        | (iii) bearing ratio                                                                                                                           | BS 1924 : Part 2                       | App 6.1                            | -       |                                       |                                                                                   |   |
|                     |                              |                   |                                                                                                        | (iv) mc                                                                                                                                       | BS 1924: Part 2                        | App 6.1                            | App 6/1 |                                       |                                                                                   |   |

**TABLE 6/1: (11/04) Acceptable Earthworks Materials: Classification and Compaction Requirements (See footnotes) (continued)**

| Class                                                       | General Material Description                             | Typical Use | Permitted Constituents (All Subject to Requirements of Clause 601 and Appendix 6/1) | Material Properties Required for Acceptability (In Addition to Requirements on Use of Fill Materials in Clause 601 and Testing in Clause 631) |                                        |                           |         |                  | Compaction Requirements in Clause 612 | Class |
|-------------------------------------------------------------|----------------------------------------------------------|-------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|---------------------------|---------|------------------|---------------------------------------|-------|
|                                                             |                                                          |             |                                                                                     | Property (See Exceptions in Previous Column)                                                                                                  | Defined and Tested in Accordance with: | Acceptable Limits Within: |         |                  |                                       |       |
|                                                             |                                                          |             |                                                                                     |                                                                                                                                               |                                        | Lower                     | Upper   |                  |                                       |       |
| S M<br>T A<br>A T<br>B E<br>I R<br>L I<br>I A<br>S L<br>E S | Lime and cement stabilised cohesive material             | Capping     | Class 7I with addition of lime and cement according to Clause 643                   | (i) pulverisation                                                                                                                             | BS 1924 : Part 2                       | 30%                       | -       | Tab 6/4 Method 7 | 9                                     | E     |
|                                                             |                                                          |             |                                                                                     | (ii) MCV immediately before completion                                                                                                        | Clause 632                             | App 6/1                   | App 6/1 |                  |                                       |       |
|                                                             |                                                          |             |                                                                                     | (iii) bearing ratio                                                                                                                           | BS 1924 : Part 2                       | App 6/1                   | -       |                  |                                       |       |
|                                                             |                                                          |             |                                                                                     | (iv) mc                                                                                                                                       | BS 1924 : Part 2                       | App 6/1                   | App 6/1 |                  |                                       |       |
| D<br>9<br>I                                                 | Lime and cement stabilised well graded granular material | Capping     | Class 6R with addition of lime and cement according to Clause 643                   | (i) pulverisation                                                                                                                             | BS 1924 : Part 2                       | 60%                       | -       | Tab 6/4 Method 6 | 9                                     | I     |
|                                                             |                                                          |             |                                                                                     | (ii) bearing ratio                                                                                                                            | BS 1924 : Part 2                       | App 6/1                   | -       |                  |                                       |       |
|                                                             |                                                          |             |                                                                                     | (iii) mc                                                                                                                                      | BS 1924 : Part 2                       | App 6/1                   | App 6/1 |                  |                                       |       |

**Footnotes to Table 6/1**

1. App = Appendix
2. Tab = Table
3. Where in the Acceptable Limits column reference is made to App 6/1, only those properties having limits ascribed to them in Appendix 6/1 shall apply. Where Appendix 6/1 gives limits for other properties not listed in this Table such limits shall also apply.
4. (05/04) Where BS 1377 : Part 2 is specified for mc, this shall mean BS 1377 : Part 2 or BS EN 1097-5 as appropriate.
5. Uniformity coefficient is defined as the ratio of the particle diameters  $D_{60}$  to  $D_{10}$  on the particle-size distribution curve, where:  
 $D_{60}$  = particle diameter at which 60% of the soil by weight is finer  
 $D_{10}$  = particle diameter at which 10% of the soil by weight is finer
6. (11/04) The limiting values for Class U1B material are given in Appendix 6/14 and Appendix 6/15.

**TABLE 6/2: (05/04) Grading Requirements for Acceptable Earthworks Materials Other Than Classes 6F4, 6F5 and 6S**

| Percentage by Mass Passing the Size Shown |           |     |                       |        |        |        |    |     |        |        |       |        |      |        |        |                             |        |                                   |                                   |                |         |
|-------------------------------------------|-----------|-----|-----------------------|--------|--------|--------|----|-----|--------|--------|-------|--------|------|--------|--------|-----------------------------|--------|-----------------------------------|-----------------------------------|----------------|---------|
| Class                                     | Size (mm) |     | Size(mm)<br>BS Series |        |        |        |    |     |        |        |       |        |      |        |        | Size (microns)<br>BS Series |        |                                   |                                   | Size (microns) | Class   |
|                                           | 500       | 300 | 125                   | 90     | 75     | 37.5   | 28 | 20  | 14     | 10     | 6.3   | 5      | 3.35 | 2      | 1.18   | 600                         | 300    | 150                               | 63                                | 2              |         |
| 1A                                        |           | 100 | 95-100                |        |        |        |    |     |        |        |       |        |      |        |        |                             |        |                                   | <15                               |                | 1A      |
| 1B                                        |           |     | 100                   |        |        |        |    |     |        |        |       |        |      |        |        |                             |        |                                   | <15                               |                | 1B      |
| 1C                                        | 100       |     | 10-95                 |        |        |        |    |     |        |        |       |        |      |        |        | 0-25                        |        |                                   | <15                               |                | 1C      |
| 2A & 2B                                   |           |     | 100                   |        |        |        |    |     |        |        |       |        |      | 80-100 |        |                             |        |                                   | 15-100                            |                | 2A & 2B |
| 2C                                        |           |     | 100                   |        |        |        |    |     |        |        |       |        |      | 15-80  |        |                             |        |                                   | 15-80                             |                | 2C      |
| 2D                                        |           |     | 100                   |        |        |        |    |     |        |        |       |        |      |        |        |                             |        |                                   | 80-100                            | 0-20           | 2D      |
| 6A                                        | 100       |     |                       |        |        |        |    |     |        | 0-100  |       | 0-85   |      |        |        | 0-45                        |        |                                   | 0-5                               |                | 6A      |
| 6B                                        | 100       |     | 0-10                  |        |        |        |    |     |        |        |       |        |      |        |        |                             |        |                                   |                                   |                | 6B      |
| 6C                                        |           |     | 100                   |        |        | 0-100  |    |     |        |        | 0-100 |        |      | 0-35   | 0-10   |                             | 0-2    |                                   |                                   |                | 6C      |
| 6D                                        |           |     |                       |        |        |        |    |     |        | 100    |       | 89-100 |      |        | 60-100 | 30-100                      | 15-80  | 5-48                              | 0-15 except 0-20 for crushed rock |                | 6D      |
| 6E & 6R                                   |           |     | 100                   | 85-100 |        |        |    |     |        | 25-100 |       |        |      |        |        |                             | 10-100 |                                   | <15                               |                | 6E & 2R |
| 6F1                                       |           |     |                       |        | 100    | 75-100 |    |     |        | 40-95  |       | 30-85  |      |        |        |                             | 10-50  |                                   | <15                               |                | 6F1     |
| 6F2                                       |           |     | 100                   | 80-100 | 65-100 | 45-100 |    |     |        | 15-60  |       | 10-45  |      |        |        |                             | 0-25   |                                   | 0-12                              |                | 6F2     |
| 6F3                                       |           |     | 100                   | 80-100 | 65-100 | 45-100 |    |     |        | 15-60  |       | 10-45  |      |        |        |                             | 0-25   |                                   | 0-12                              |                | 6F3     |
| 6H                                        |           |     |                       |        |        |        |    | 100 |        |        |       | 60-100 |      |        | 15-45  | 0-25                        |        | 0-5                               |                                   |                | 6H      |
| 6I & 6J                                   |           |     | 100                   |        | 85-100 |        |    |     | 25-100 |        |       |        |      | 15-100 |        | 9-100                       |        |                                   | <15                               |                | 6I & 6J |
| 6K                                        |           |     |                       |        |        |        |    | 100 |        |        |       |        |      |        |        |                             |        |                                   | 0-10                              |                | 6K      |
| 6L                                        |           |     |                       |        |        |        |    |     |        | 100    |       | 89-100 |      | 60-100 | 30-100 | 15-100                      | 5-70   | 0-15 except 0-20 for crushed rock |                                   |                | 6L      |

**TABLE 6/2: (05/04) Grading Requirements for Acceptable Earthworks Materials Other Than Classes 6F4, 6F5 and 6S**

| Percentage by Mass Passing the Size Shown |           |     |                       |        |        |        |    |     |        |        |       |        |      |        |        |                             |       |                                   |                                   |                |         |
|-------------------------------------------|-----------|-----|-----------------------|--------|--------|--------|----|-----|--------|--------|-------|--------|------|--------|--------|-----------------------------|-------|-----------------------------------|-----------------------------------|----------------|---------|
| Class                                     | Size (mm) |     | Size(mm)<br>BS Series |        |        |        |    |     |        |        |       |        |      |        |        | Size (microns)<br>BS Series |       |                                   |                                   | Size (microns) | Class   |
|                                           | 500       | 300 | 125                   | 90     | 75     | 37.5   | 28 | 20  | 14     | 10     | 6.3   | 5      | 3.35 | 2      | 1.18   | 600                         | 300   | 150                               | 63                                | 2              |         |
| 1A                                        |           | 100 | 95-100                |        |        |        |    |     |        |        |       |        |      |        |        |                             |       |                                   | <15                               |                | 1A      |
| 1B                                        |           |     | 100                   |        |        |        |    |     |        |        |       |        |      |        |        |                             |       |                                   | <15                               |                | 1B      |
| 1C                                        | 100       |     | 10-95                 |        |        |        |    |     |        |        |       |        |      |        |        | 0-25                        |       |                                   | <15                               |                | 1C      |
| 2A & 2B                                   |           |     | 100                   |        |        |        |    |     |        |        |       |        |      | 80-100 |        |                             |       |                                   | 15-100                            |                | 2A & 2B |
| 2C                                        |           |     | 100                   |        |        |        |    |     |        |        |       |        |      | 15-80  |        |                             |       |                                   | 15-80                             |                | 2C      |
| 2D                                        |           |     | 100                   |        |        |        |    |     |        |        |       |        |      |        |        |                             |       |                                   | 80-100                            | 0-20           | 2D      |
| 6A                                        | 100       |     |                       |        |        |        |    |     |        | 0-100  |       | 0-85   |      |        |        | 0-45                        |       |                                   | 0-5                               |                | 6A      |
| 6B                                        | 100       |     | 0-10                  |        |        |        |    |     |        |        |       |        |      |        |        |                             |       |                                   |                                   |                | 6B      |
| 6C                                        |           |     | 100                   |        |        | 0-100  |    |     |        |        | 0-100 |        |      | 0-35   | 0-10   | 0-2                         |       |                                   |                                   |                | 6C      |
| 6D                                        |           |     |                       |        |        |        |    |     |        | 100    |       | 89-100 |      |        | 60-100 | 30-100                      | 15-80 | 5-48                              | 0-15 except 0-20 for crushed rock |                | 6D      |
| 6E & 6R                                   |           |     | 100                   | 85-100 |        |        |    |     |        | 25-100 |       |        |      |        |        | 10-100                      |       |                                   | <15                               |                | 6E & 2R |
| 6F1                                       |           |     |                       |        | 100    | 75-100 |    |     |        | 40-95  |       | 30-85  |      |        |        | 10-50                       |       |                                   | <15                               |                | 6F1     |
| 6F2                                       |           |     | 100                   | 80-100 | 65-100 | 45-100 |    |     |        | 15-60  |       | 10-45  |      |        |        | 0-25                        |       |                                   | 0-12                              |                | 6F2     |
| 6F3                                       |           |     | 100                   | 80-100 | 65-100 | 45-100 |    |     |        | 15-60  |       | 10-45  |      |        |        | 0-25                        |       |                                   | 0-12                              |                | 6F3     |
| 6H                                        |           |     |                       |        |        |        |    | 100 |        |        |       | 60-100 |      |        | 15-45  | 0-25                        |       | 0-5                               |                                   |                | 6H      |
| 6I & 6J                                   |           |     | 100                   |        | 85-100 |        |    |     | 25-100 |        |       |        |      | 15-100 |        | 9-100                       |       |                                   | <15                               |                | 6I & 6J |
| 6K                                        |           |     |                       |        |        |        |    | 100 |        |        |       |        |      |        |        |                             |       |                                   | 0-10                              |                | 6K      |
| 6L                                        |           |     |                       |        |        |        |    |     |        | 100    |       | 89-100 |      | 60-100 | 30-100 | 15-100                      | 5-70  | 0-15 except 0-20 for crushed rock |                                   |                | 6L      |

**TABLE 6/2: (11/05) Grading Requirements for Acceptable Earthworks Materials (continued)**

| Percentage by Mass Passing the Size Shown |           |     |                       |    |        |      |        |        |        |    |     |   |      |        |                             |        |     |      |                |         |
|-------------------------------------------|-----------|-----|-----------------------|----|--------|------|--------|--------|--------|----|-----|---|------|--------|-----------------------------|--------|-----|------|----------------|---------|
| Class                                     | Size (mm) |     | Size(mm)<br>BS Series |    |        |      |        |        |        |    |     |   |      |        | Size (microns)<br>BS Series |        |     |      | Size (microns) | Class   |
|                                           | 500       | 300 | 125                   | 90 | 75     | 37.5 | 28     | 20     | 14     | 10 | 6.3 | 5 | 3.35 | 2      | 1.18                        | 600    | 300 | 150  | 63             | 2       |
| 6M                                        |           |     |                       |    | 100    |      |        |        |        |    |     |   |      |        |                             |        |     |      | 0-10           | 6M      |
| 6N & 6P                                   |           |     |                       |    | 100    |      |        |        |        |    |     |   |      |        |                             |        |     |      | <15            | 6N & 6P |
| 6S                                        |           |     |                       |    | 100    |      |        |        |        |    |     |   |      | 60-100 |                             | 30-90  |     | 4-45 | 0-16           | 6S      |
| 7A                                        |           |     |                       |    | 100    |      |        |        |        |    |     |   |      |        |                             |        |     |      | 15-100         | 7A      |
| 7C                                        |           |     | 100                   |    | 85-100 |      |        |        | 83-100 |    |     |   |      | 80-100 |                             | 60-100 |     |      | 15-45          | 7C      |
| 7D                                        |           |     | 100                   |    | 85-100 |      |        |        | 40-90  |    |     |   |      | 15-79  |                             | 15-75  |     |      | 15-45          | 7D      |
| 7E                                        |           |     |                       |    | 100    |      |        | 95-100 |        |    |     |   |      |        |                             |        |     |      | 15-100         | 7E      |
| 7F                                        |           |     | 100                   |    |        |      |        |        |        |    |     |   |      |        |                             |        |     |      | 15-100         | 7F      |
| 7I                                        |           |     |                       |    | 100    |      | 95-100 |        |        |    |     |   |      |        |                             |        |     |      | 15-100         | 7I      |

## **Appendix C – Imported Soils Target Criteria**

# Generic Assessment Criteria Values

| Contaminant                             |                                            | SOM   | Res +  | Res -                        | Allot.  | Comm.                        | POS <sup>resi</sup> | POS <sup>park</sup>      | Source     |
|-----------------------------------------|--------------------------------------------|-------|--------|------------------------------|---------|------------------------------|---------------------|--------------------------|------------|
| Metals                                  | Inorganic Arsenic                          | N/A   | 37     | 40                           | 49      | 640                          | 79                  | 168                      | DEFRA C4SL |
|                                         | Beryllium                                  | N/A   | 1.7    | 1.7                          | 35      | 12                           | 2.2                 | 63                       | LQM S4UL   |
|                                         | Boron                                      | N/A   | 290    | 11,000                       | 45      | 240,000                      | 21,000              | 46,000                   | LQM S4UL   |
|                                         | Cadmium                                    | N/A   | 26     | 149                          | 4.9     | 410                          | 220                 | 880                      | DEFRA C4SL |
|                                         | Chromium (III)                             | N/A   | 910    | 910                          | 18,000  | 8,600                        | 1,500               | 33,000                   | LQM S4UL   |
|                                         | Chromium (VI)                              | N/A   | 21.0   | 21.0                         | 170.0   | 49                           | 23.0                | 250                      | DEFRA C4SL |
|                                         | Copper                                     | N/A   | 2,400  | 7,100                        | 520     | 68,000                       | 12,000              | 44,000                   | LQM S4UL   |
|                                         | Lead                                       | N/A   | 200    | 310                          | 80      | 2,330                        | 630                 | 1,300                    | DEFRA C4SL |
|                                         | Elemental Mercury                          | N/A   | 1.2    | 1.2                          | 21      | 58 (25.8) <sup>vap</sup>     | 16                  | 30 (25.8) <sup>vap</sup> | LQM S4UL   |
|                                         | Inorganic Mercury                          | N/A   | 40     | 56                           | 19      | 1,100                        | 120                 | 240                      | LQM S4UL   |
|                                         | Methylmercury                              | N/A   | 11     | 15                           | 6.0     | 320                          | 40                  | 68                       | LQM S4UL   |
|                                         | Nickel (2015 update)                       | N/A   | 130    | 180                          | 53      | 980                          | 230                 | 800                      | LQM S4UL   |
|                                         | Selenium                                   | N/A   | 250    | 430                          | 88      | 12,000                       | 1,100               | 1,800                    | LQM S4UL   |
|                                         | Vanadium                                   | N/A   | 410    | 1,200                        | 91      | 9,000                        | 2,000               | 5,000                    | LQM S4UL   |
| Zinc                                    | N/A                                        | 3,700 | 40,000 | 620                          | 730,000 | 81,000                       | 170,000             | LQM S4UL                 |            |
| Polycyclic Aromatic Hydrocarbons (PAHs) | Acenaphthene                               | 1%    | 210    | 3,000 (57.1) <sup>sol</sup>  | 34      | 84,000 (57.0) <sup>sol</sup> | 15,000              | 29,000                   | LQM S4UL   |
|                                         |                                            | 2.5%  | 510    | 4,700 (141) <sup>sol</sup>   | 85      | 97,000 (141) <sup>sol</sup>  | 15,000              | 30,000                   | LQM S4UL   |
|                                         |                                            | 6%    | 1,100  | 6,000 (336) <sup>sol</sup>   | 200     | 100,000                      | 15,000              | 30,000                   | LQM S4UL   |
|                                         | Acenaphthylene                             | 1%    | 170    | 2,900 (86.1) <sup>sol</sup>  | 28      | 83,000 (86.1) <sup>sol</sup> | 15,000              | 29,000                   | LQM S4UL   |
|                                         |                                            | 2.5%  | 420    | 4,600 (212) <sup>sol</sup>   | 69      | 97,000 (212) <sup>sol</sup>  | 15,000              | 30,000                   | LQM S4UL   |
|                                         |                                            | 6%    | 920    | 6,000 (506) <sup>sol</sup>   | 160     | 100,000                      | 15,000              | 30,000                   | LQM S4UL   |
|                                         | Anthracene                                 | 1%    | 2,400  | 31,000 (1.17) <sup>vap</sup> | 380     | 520,000                      | 74,000              | 150,000                  | LQM S4UL   |
|                                         |                                            | 2.5%  | 5,400  | 35,000                       | 950     | 540,000                      | 74,000              | 150,000                  | LQM S4UL   |
|                                         |                                            | 6%    | 11,000 | 37,000                       | 2,200   | 540,000                      | 74,000              | 150,000                  | LQM S4UL   |
|                                         | Benz(a)anthracene                          | 1%    | 7.2    | 11                           | 2.9     | 170                          | 29                  | 49                       | LQM S4UL   |
|                                         |                                            | 2.5%  | 11     | 14                           | 6.5     | 170                          | 29                  | 56                       | LQM S4UL   |
|                                         |                                            | 6%    | 13     | 15                           | 13      | 180                          | 29                  | 62                       | LQM S4UL   |
|                                         | Benzo(a)pyrene (only)                      | 1%    | 5.0    | 5.3                          | 5.70    | 77                           | 10.0                | 21                       | DEFRA C4SL |
|                                         |                                            | 2.5%  | 5.0    | 5.3                          | 5.70    | 77                           | 10.0                | 21                       | DEFRA C4SL |
|                                         |                                            | 6%    | 5.0    | 5.3                          | 5.70    | 77                           | 10.0                | 21                       | DEFRA C4SL |
|                                         | Benzo(a)pyrene (surrogate marker Coal Tar) | 1%    | 0.8    | 1.2                          | 0.32    | 15                           | 2.2                 | 4                        | LQM S4UL   |
|                                         |                                            | 2.5%  | 1.0    | 1.2                          | 0.67    | 15                           | 2.2                 | 5                        | LQM S4UL   |
|                                         |                                            | 6%    | 1.1    | 1.2                          | 1.20    | 15                           | 2.2                 | 5                        | LQM S4UL   |
|                                         | Benzo(b)fluoranthene                       | 1%    | 2.6    | 3.9                          | 0.99    | 44                           | 7.1                 | 13                       | LQM S4UL   |
|                                         |                                            | 2.5%  | 3.3    | 4.0                          | 2.1     | 44                           | 7.2                 | 15                       | LQM S4UL   |
|                                         |                                            | 6%    | 3.7    | 4.0                          | 3.9     | 45                           | 7.2                 | 16                       | LQM S4UL   |
|                                         | Benzo(ghi)perylene                         | 1%    | 320    | 360                          | 290     | 3,900                        | 640                 | 1,400                    | LQM S4UL   |
|                                         |                                            | 2.5%  | 340    | 360                          | 470     | 4,000                        | 640                 | 1,500                    | LQM S4UL   |
|                                         |                                            | 6%    | 350    | 360                          | 640     | 4,000                        | 640                 | 1,600                    | LQM S4UL   |
|                                         | Benzo(k)fluoranthene                       | 1%    | 77     | 110                          | 37      | 1,200                        | 190                 | 370                      | LQM S4UL   |
|                                         |                                            | 2.5%  | 93     | 110                          | 75      | 1,200                        | 190                 | 410                      | LQM S4UL   |
|                                         |                                            | 6%    | 100    | 110                          | 130     | 1,200                        | 190                 | 440                      | LQM S4UL   |
|                                         | Chrysene                                   | 1%    | 15     | 30                           | 4.1     | 350                          | 57                  | 93                       | LQM S4UL   |
|                                         |                                            | 2.5%  | 22     | 31                           | 9.4     | 350                          | 57                  | 110                      | LQM S4UL   |
|                                         |                                            | 6%    | 27     | 32                           | 19      | 350                          | 57                  | 120                      | LQM S4UL   |
|                                         | Dibenzo(ah)anthracene                      | 1%    | 0.24   | 0.31                         | 0.14    | 3.5                          | 0.57                | 1.1                      | LQM S4UL   |
|                                         |                                            | 2.5%  | 0.28   | 0.32                         | 0.27    | 3.6                          | 0.58                | 1.3                      | LQM S4UL   |
|                                         |                                            | 6%    | 0.3    | 0.32                         | 0.43    | 3.6                          | 0.58                | 1.4                      | LQM S4UL   |
|                                         | Fluoranthene                               | 1%    | 280    | 1,500                        | 52      | 23,000                       | 3,100               | 6,300                    | LQM S4UL   |
|                                         |                                            | 2.5%  | 560    | 1,600                        | 130     | 23,000                       | 3,100               | 6,300                    | LQM S4UL   |
|                                         |                                            | 6%    | 890    | 1,600                        | 290     | 23,000                       | 3,100               | 6,400                    | LQM S4UL   |
|                                         | Fluorene                                   | 1%    | 170    | 2,800 (36.0) <sup>sol</sup>  | 27      | 63,000 (30.9) <sup>sol</sup> | 9,900               | 20,000                   | LQM S4UL   |
|                                         |                                            | 2.5%  | 400    | 3,800 (76.5) <sup>sol</sup>  | 67      | 68,000                       | 9,900               | 20,000                   | LQM S4UL   |
|                                         |                                            | 6%    | 860    | 4,500 (183) <sup>sol</sup>   | 160     | 71,000                       | 9,900               | 20,000                   | LQM S4UL   |
|                                         | Indeno(123-cd)pyrene                       | 1%    | 27     | 45                           | 9.5     | 500                          | 82                  | 150                      | LQM S4UL   |
|                                         |                                            | 2.5%  | 36     | 46                           | 21      | 510                          | 82                  | 170                      | LQM S4UL   |
|                                         |                                            | 6%    | 41     | 46                           | 39      | 510                          | 82                  | 180                      | LQM S4UL   |
|                                         | Naphthalene                                | 1%    | 15     | 15                           | 65      | 1,600*                       | 11,000*             | 8,400*                   | DEFRA C4SL |
|                                         |                                            | 2.5%  | 36     | 36                           | 130     | 3,700*                       | 15,000*             | 17,00*                   | DEFRA C4SL |
|                                         |                                            | 6%    | 85     | 85                           | 200     | 8,400*                       | 1,200*              | 1,900*                   | DEFRA C4SL |
|                                         | Phenanthrene                               | 1%    | 95     | 1,300 (36.0) <sup>sol</sup>  | 15      | 22,000                       | 3,100               | 6,200                    | LQM S4UL   |
|                                         |                                            | 2.5%  | 220    | 1,500                        | 38      | 22,000                       | 3,100               | 6,200                    | LQM S4UL   |
|                                         |                                            | 6%    | 440    | 1,500                        | 90      | 22,000                       | 3,100               | 6,300                    | LQM S4UL   |
|                                         | Pyrene                                     | 1%    | 620    | 3,700                        | 110     | 54,000                       | 7,400               | 15,000                   | LQM S4UL   |
|                                         |                                            | 2.5%  | 1,200  | 3,800                        | 270     | 54,000                       | 7,400               | 15,000                   | LQM S4UL   |
|                                         |                                            | 6%    | 2,000  | 3,800                        | 620     | 54,000                       | 7,400               | 15,000                   | LQM S4UL   |
|                                         | Coal Tar (B(a)P as surrogate marker)       | 1%    | 0.79   | 1.2                          | 0.32    | 15                           | 2.2                 | 4.4                      | LQM S4UL   |
|                                         |                                            | 2.5%  | 0.98   | 1.2                          | 0.67    | 15                           | 2.2                 | 4.7                      | LQM S4UL   |
|                                         |                                            | 6%    | 1.1    | 1.2                          | 1.2     | 15                           | 2.2                 | 4.8                      | LQM S4UL   |

# Generic Assessment Criteria Values

| Contaminant      |                           | SOM  | Res +           | Res -                | Allot.    | Comm.               | POS <sup>res</sup> i | POS <sup>park</sup> | Source   |
|------------------|---------------------------|------|-----------------|----------------------|-----------|---------------------|----------------------|---------------------|----------|
| BTEX Compounds   | Benzene                   | 1%   | 0.87            | 0.38                 | 0.017     | 27                  | 72                   | 90                  | LQM S4UL |
|                  |                           | 2.5% | 0.17            | 0.70                 | 0.034     | 47                  | 72                   | 100                 | LQM S4UL |
|                  |                           | 6%   | 0.37            | 1.4                  | 0.075     | 90                  | 73                   | 110                 | LQM S4UL |
|                  | Toluene                   | 1%   | 130             | 880 (869) vap        | 22        | 56,000 (869) vap    | 56,000               | 87,000 (869) vap    | LQM S4UL |
|                  |                           | 2.5% | 290             | 1,900                | 51        | 110,000 (1,920) vap | 56,000               | 95,000 (1,920) vap  | LQM S4UL |
|                  |                           | 6%   | 660             | 3,900                | 120       | 180,000 (4,360) vap | 56,000               | 100,000 (4,360) vap | LQM S4UL |
|                  | Ethylbenzene              | 1%   | 47              | 83                   | 16        | 5,700 (518) vap     | 24,000               | 17,000 (518) vap    | LQM S4UL |
|                  |                           | 2.5% | 110             | 190                  | 39        | 13,000 (1,220) vap  | 24,000               | 22,000 (1,220) vap  | LQM S4UL |
|                  |                           | 6%   | 260             | 440                  | 91        | 27,000 (2,840) vap  | 25,000               | 27,000 (2,840) vap  | LQM S4UL |
|                  | o-xylene                  | 1%   | 60              | 88                   | 28        | 6,600 (478) sol     | 41,000               | 17,000 (478) sol    | LQM S4UL |
|                  |                           | 2.5% | 140             | 210                  | 67        | 15,000 (1,120) sol  | 42,000               | 24,000 (1,120) sol  | LQM S4UL |
|                  |                           | 6%   | 330             | 480                  | 160       | 33,000 (2,620) sol  | 43,000               | 33,000 (2,620) sol  | LQM S4UL |
|                  | m-xylene                  | 1%   | 59              | 82                   | 31        | 6,200 (625) vap     | 41,000               | 17,000 (625) vap    | LQM S4UL |
|                  |                           | 2.5% | 140             | 190                  | 74        | 14,000 (1,470) vap  | 42,000               | 24,000 (1,470) vap  | LQM S4UL |
|                  |                           | 6%   | 320             | 450                  | 170       | 31,000 (3,460) vap  | 43,000               | 32,000 (3,460) vap  | LQM S4UL |
|                  | p-xylene                  | 1%   | 56              | 79                   | 29        | 5,900 (576) sol     | 41,000               | 17,000 (576) sol    | LQM S4UL |
|                  |                           | 2.5% | 130             | 180                  | 69        | 14,000 (1,350) sol  | 42,000               | 23,000 (1,350) sol  | LQM S4UL |
|                  |                           | 6%   | 310             | 430                  | 160       | 30,000 (3,170) sol  | 43,000               | 31,000 (3,170) sol  | LQM S4UL |
| Petroleum Hydroc | Aliphatic                 |      |                 |                      |           |                     |                      |                     |          |
|                  | EC 5-6                    | 1%   | 42              | 42                   | 730       | 3,200 (304) sol     | 570,000(304)sol      | 95,000 (304) sol    | LQM S4UL |
|                  | EC>6-8                    | 1%   | 100             | 100                  | 2,300     | 7,800 (144) sol     | 600,000              | 150,000 (144) sol   | LQM S4UL |
|                  | EC>8-10                   | 1%   | 27              | 27                   | 320       | 2,000 (78) sol      | 13,000               | 14,000 (78) vap     | LQM S4UL |
|                  | EC>10-12                  | 1%   | 130 (48) vap    | 130 (48) vap         | 2,200     | 9,700 (48) sol      | 13,000               | 21,000 (48) vap     | LQM S4UL |
|                  | EC>12-16                  | 1%   | 1,100 (24) sol  | 1,100 (24) sol       | 11,000    | 59,000 (24) sol     | 13,000               | 25,000 (24) sol     | LQM S4UL |
|                  | EC>16-35                  | 1%   | 65,000 (8.48)   | 65,000 (8.48) f, sol | 260,000 f | 160,000 f           | 250,000 f            | 450,000 f           | LQM S4UL |
|                  | EC>35-44                  | 1%   | 65,000 (8.48)   | 65,000 (8.48) f, sol | 260,000 f | 160,000 f           | 250,000 f            | 450,000 f           | LQM S4UL |
|                  | Aliphatic                 |      |                 |                      |           |                     |                      |                     |          |
|                  | EC 5-6                    | 2.5% | 78              | 78                   | 1,700     | 5,900 (558) sol     | 590,000              | 130,000 (558) sol   | LQM S4UL |
|                  | EC>6-8                    | 2.5% | 230             | 230                  | 5,600     | 17,000 (322) sol    | 610,000              | 220,000 (322) sol   | LQM S4UL |
|                  | EC>8-10                   | 2.5% | 65              | 65                   | 770       | 4,800 (190) vap     | 13,000               | 18,000 (190) vap    | LQM S4UL |
|                  | EC>10-12                  | 2.5% | 330 (118) vap   | 330 (118) vap        | 4,400     | 23,000 (118) vap    | 13,000               | 23,000 (118) vap    | LQM S4UL |
|                  | EC>12-16                  | 2.5% | 2,400 (59) sol  | 2,400 (59) sol       | 13,000    | 82,000 (59) sol     | 13,000               | 25,000 (59) sol     | LQM S4UL |
|                  | EC>16-35                  | 2.5% | 92,000 (21)     | 92,000 (21) f, sol   | 270,000 f | 1,700,000 f         | 250,000 f            | 480,000 f           | LQM S4UL |
|                  | EC>35-44                  | 2.5% | 92,000 (21)     | 92,000 (21) f, sol   | 270,000 f | 1,700,000 f         | 250,000 f            | 480,000 f           | LQM S4UL |
|                  | Aliphatic                 |      |                 |                      |           |                     |                      |                     |          |
|                  | EC 5-6                    | 6%   | 160             | 160                  | 3,900     | 12,000 (1,150) sol  | 600,000              | 180,000 (1,150)     | LQM S4UL |
|                  | EC>6-8                    | 6%   | 530             | 530                  | 13,000    | 40,000 (736) sol    | 620,000              | 320,000 (736) sol   | LQM S4UL |
|                  | EC>8-10                   | 6%   | 150             | 150                  | 1,700     | 11,000 (451) vap    | 13,000               | 21,000 (451) vap    | LQM S4UL |
|                  | EC>10-12                  | 6%   | 760 (283) vap   | 760 (283) vap        | 7,300     | 47,000 (283) vap    | 13,000               | 24,000 (283) vap    | LQM S4UL |
|                  | EC>12-16                  | 6%   | 4,300 (142) sol | 4,400 (142) sol      | 13,000    | 90,000 (142) sol    | 13,000               | 26,000 (142) sol    | LQM S4UL |
|                  | EC>16-35                  | 6%   | 110,000 f       | 110,000 f            | 270,000 f | 1,800,000 f         | 250,000 f            | 490,000 f           | LQM S4UL |
|                  | EC>35-44                  | 6%   | 110,000 f       | 110,000 f            | 270,000 f | 1,800,000 f         | 250,000 f            | 490,000 f           | LQM S4UL |
|                  | Aromatic                  |      |                 |                      |           |                     |                      |                     |          |
|                  | EC5-7(benzene as non-     | 1%   | 70              | 370                  | 13        | 26,000 (1,220) sol  | 56,000               | 76,000 (1,220) sol  | LQM S4UL |
|                  | EC>7-8(toluene)           | 1%   | 130             | 860                  | 22        | 56,000 (869) vap    | 56,000               | 87,000 (869) vap    | LQM S4UL |
|                  | EC>8-10                   | 1%   | 34              | 47                   | 8.6       | 3,500 (613) vap     | 5,000                | 7,200 (613) vap     | LQM S4UL |
|                  | EC>10-12                  | 1%   | 74              | 250                  | 13        | 16,000 (364) sol    | 5,000                | 9,200 (364) sol     | LQM S4UL |
|                  | EC>12-16                  | 1%   | 140             | 1,800                | 23        | 36,000 (169) sol    | 5,100                | 10,000              | LQM S4UL |
|                  | EC>16-21                  | 1%   | 260 f           | 1,900 f              | 46 f      | 28,000 f            | 3,800 f              | 7,600 f             | LQM S4UL |
|                  | EC>21-35                  | 1%   | 1,100 f         | 1,900 f              | 370 f     | 28,000 f            | 3,800 f              | 7,800 f             | LQM S4UL |
|                  | EC>35-44                  | 1%   | 1,100 f         | 1,900 f              | 370 f     | 28,000 f            | 3,800 f              | 7,800 f             | LQM S4UL |
|                  | Aromatic                  |      |                 |                      |           |                     |                      |                     |          |
|                  | EC5-7(benzene as non-     | 2.5% | 140             | 690                  | 27        | 46,000 (2,260) sol  | 56,000               | 84,000 (2,260) sol  | LQM S4UL |
|                  | EC>7-8(toluene)           | 2.5% | 290             | 1,800                | 51        | 110,000 (1,920) sol | 56,000               | 95,000 (1,920) sol  | LQM S4UL |
|                  | EC>8-10                   | 2.5% | 83              | 110                  | 21        | 8,100 (1,500) vap   | 5,000                | 8,500 (1,500) vap   | LQM S4UL |
|                  | EC>10-12                  | 2.5% | 180             | 590                  | 31        | 28,000 (899) sol    | 5,000                | 9,700 (899) sol     | LQM S4UL |
|                  | EC>12-16                  | 2.5% | 330             | 2,300 (419) sol      | 57        | 37,000              | 5,100                | 10,000              | LQM S4UL |
|                  | EC>16-21                  | 2.5% | 540 f           | 1,900 f              | 110 f     | 28,000 f            | 3,800 f              | 7,700 f             | LQM S4UL |
|                  | EC>21-35                  | 2.5% | 1,500 f         | 1,900 f              | 820 f     | 28,000 f            | 3,800 f              | 7,800 f             | LQM S4UL |
|                  | EC>35-44                  | 2.5% | 1,500 f         | 1,900 f              | 820 f     | 28,000 f            | 3,800 f              | 7,800 f             | LQM S4UL |
|                  | Aromatic                  |      |                 |                      |           |                     |                      |                     |          |
|                  | EC5-7(benzene as non-     | 6%   | 300             | 1,400                | 57        | 86,000 (4,710) sol  | 56,000               | 92,000 (4,710) sol  | LQM S4UL |
|                  | EC>7-8(toluene)           | 6%   | 660             | 3,900                | 120       | 180,000 (4,360) vap | 56,000               | 100,000 (4,360)     | LQM S4UL |
|                  | EC>8-10                   | 6%   | 190             | 270                  | 51        | 17,000 (3,580) vap  | 5,000                | 9,300 (3,580) vap   | LQM S4UL |
|                  | EC>10-12                  | 6%   | 380             | 1,200                | 4         | 34,000 (2,150) sol  | 5,000                | 10,000              | LQM S4UL |
|                  | EC>12-16                  | 6%   | 660             | 2,500                | 130       | 38,000              | 5,100                | 10,000              | LQM S4UL |
|                  | EC>16-21                  | 6%   | 930 f           | 1,900 f              | 260 f     | 28,000 f            | 3,800 f              | 7,800 f             | LQM S4UL |
|                  | EC>21-35                  | 6%   | 1,700 f         | 1,900 f              | 1,600 f   | 28,000 f            | 3,800 f              | 7,900 f             | LQM S4UL |
|                  | EC>35-44                  | 6%   | 1,700 f         | 1,900 f              | 1,600 f   | 28,000 f            | 3,800 f              | 7,900 f             | LQM S4UL |
|                  | Aliphatic +Aromatic >EC44 | 1%   | 1,600 f         | 1,900 f              | 1,200 f   | 28,000 f            | 3,800 f              | 7,800 f             | LQM S4UL |
|                  |                           | 2.5% | 1,800 f         | 1,900 f              | 2,100 f   | 28,000 f            | 3,800 f              | 7,800 f             | LQM S4UL |
|                  |                           | 6%   | 1,900 f         | 1,900 f              | 3,000 f   | 28,000 f            | 3,800 f              | 7,900 f             | LQM S4UL |

# Generic Assessment Criteria Values

| Contaminant                            |                                                | SOM  | Res +                     | Res -                        | Allot.  | Comm.                          | POS <sup>res</sup> i | POS <sup>park</sup>           | Source     |
|----------------------------------------|------------------------------------------------|------|---------------------------|------------------------------|---------|--------------------------------|----------------------|-------------------------------|------------|
| Chloroalkanes and Alkenes & Explosives | 1,2 Dichloroethane (DCA)                       | 1%   | 0.0071                    | 0.0092                       | 0.0046  | 0.67                           | 29                   | 21                            | LQM S4UL   |
|                                        |                                                | 2.5% | 0.0110                    | 0.0130                       | 0.0083  | 0.97                           | 29                   | 24                            | LQM S4UL   |
|                                        |                                                | 6%   | 0.0190                    | 0.0230                       | 0.0160  | 1.7                            | 29                   | 28                            | LQM S4UL   |
|                                        | 1,1,1 Trichloroethane (TCA)                    | 1%   | 8.8                       | 9.0                          | 48      | 660                            | 140,000              | 57,000 (1,425) <sup>vap</sup> | LQM S4UL   |
|                                        |                                                | 2.5% | 18                        | 18                           | 110     | 1,300                          | 140,000              | 76,000 (2,915) <sup>vap</sup> | LQM S4UL   |
|                                        |                                                | 6%   | 39                        | 40                           | 240     | 3,000                          | 140,000              | 100,000 (6,392)               | LQM S4UL   |
|                                        | 1,1,2,2-Tetrachloroethanes (PCA)               | 1%   | 1.6                       | 3.9                          | 0.41    | 270                            | 1,400                | 1,800                         | LQM S4UL   |
|                                        |                                                | 2.5% | 3.4                       | 8.0                          | 0.89    | 550                            | 1,400                | 2,100                         | LQM S4UL   |
|                                        |                                                | 6%   | 7.5                       | 17                           | 2.0     | 1,100                          | 1,400                | 2,300                         | LQM S4UL   |
|                                        | 1,1,1,2-Tetrachloroethanes (PCA)               | 1%   | 1.2                       | 1.5                          | 0.79    | 110                            | 1,400                | 1,500                         | LQM S4UL   |
|                                        |                                                | 2.5% | 2.8                       | 3.5                          | 1.9     | 250                            | 1,400                | 1,800                         | LQM S4UL   |
|                                        |                                                | 6%   | 6.4                       | 8.2                          | 4.4     | 560                            | 1,400                | 2,100                         | LQM S4UL   |
|                                        | Tetrachloroethene (PCE)                        | 1%   | 0.31                      | 0.32                         | 2.00    | 24                             | 3,200                | 1400                          | DEFRA C4SL |
|                                        |                                                | 2.5% | 0.70                      | 0.71                         | 4.8     | 55                             | 3,300                | 1900                          | DEFRA C4SL |
|                                        |                                                | 6%   | 1.60                      | 1.60                         | 11.0    | 130                            | 3,400                | 2,500                         | DEFRA C4SL |
|                                        | Tetrachloromethane (carbon tetrachloride)      | 1%   | 0.03                      | 0.03                         | 0.45    | 2.9                            | 890                  | 190                           | LQM S4UL   |
|                                        |                                                | 2.5% | 0.06                      | 0.06                         | 1.0     | 6.3                            | 920                  | 270                           | LQM S4UL   |
|                                        |                                                | 6%   | 0.13                      | 0.13                         | 2.4     | 14                             | 950                  | 400                           | LQM S4UL   |
|                                        | Trichloroethene (TCE)                          | 1%   | 0.009                     | 0.010                        | 0.032   | 0.7                            | 76.0                 | 41.0                          | DEFRA C4SL |
|                                        |                                                | 2.5% | 0.020                     | 0.020                        | 0.072   | 1.5                            | 78.0                 | 51.0                          | DEFRA C4SL |
|                                        |                                                | 6%   | 0.043                     | 0.045                        | 0.160   | 3.4                            | 79.0                 | 69.0                          | DEFRA C4SL |
|                                        | cis 1,2-dichloroethene                         | 1%   | 0.46                      | 0.50                         | 0.890   | 38                             | 3,800                | 2,000                         | DEFRA C4SL |
|                                        |                                                | 2.5% | 0.78                      | 0.84                         | 1.70    | 64                             | 3,800                | 2,400                         | DEFRA C4SL |
|                                        |                                                | 6%   | 1.50                      | 1.60                         | 3.60    | 120                            | 3,900                | 3,100                         | DEFRA C4SL |
|                                        | Trichloromethane (chloroform)                  | 1%   | 0.91                      | 1.2                          | 0.42    | 99                             | 2,500                | 2,600                         | LQM S4UL   |
|                                        |                                                | 2.5% | 1.7                       | 2.1                          | 0.83    | 170                            | 2,500                | 2,800                         | LQM S4UL   |
|                                        |                                                | 6%   | 3.4                       | 4.2                          | 1.7     | 350                            | 2,500                | 3,100                         | LQM S4UL   |
|                                        | Trans-1,2 Dichloroethene                       | 1%   | 0.9                       | 0.9                          | 3.7     | 69                             | 13,000               | 5,600                         | DEFRA C4SL |
|                                        |                                                | 2.5% | 1.6                       | 1.7                          | 7.5     | 120                            | 13,000               | 7,000                         | DEFRA C4SL |
|                                        |                                                | 6%   | 3.3                       | 3.4                          | 16.0    | 260                            | 13,000               | 9,100                         | DEFRA C4SL |
|                                        | Chloroethene (vinyl chloride)                  | 1%   | 0.006                     | 0.015                        | 0.0017  | 1.1E+00                        | 7.8                  | 18.0                          | DEFRA C4SL |
|                                        |                                                | 2.5% | 0.010                     | 0.019                        | 0.0031  | 1.4E+00                        | 7.8                  | 19.0                          | DEFRA C4SL |
|                                        |                                                | 6%   | 0.017                     | 0.029                        | 0.0058  | 2.20                           | 7.8                  | 19.0                          | DEFRA C4SL |
|                                        | 2,4,6-Trinitrotoluene (TNT)                    | 1%   | 1.6                       | 65                           | 0.24    | 1,000                          | 130                  | 260                           | LQM S4UL   |
|                                        |                                                | 2.5% | 3.7                       | 66                           | 0.58    | 1,000                          | 130                  | 270                           | LQM S4UL   |
|                                        |                                                | 6%   | 8.1                       | 66                           | 1.4     | 1,000                          | 130                  | 270                           | LQM S4UL   |
|                                        | RDX                                            | 1%   | 120                       | 13,000                       | 17      | 210,000                        | 26,000               | 49,000 (18.7) <sup>sol</sup>  | LQM S4UL   |
|                                        |                                                | 2.5% | 250                       | 13,000                       | 38      | 210,000                        | 26,000               | 51,000                        | LQM S4UL   |
|                                        |                                                | 6%   | 540                       | 13,000                       | 85      | 210,000                        | 27,000               | 53,000                        | LQM S4UL   |
|                                        | HMX                                            | 1%   | 5.7                       | 6,700                        | 0.86    | 110,000                        | 13,000               | 23,000 (0.35) <sup>vap</sup>  | LQM S4UL   |
|                                        |                                                | 2.5% | 13                        | 6,700                        | 1.9     | 110,000                        | 13,000               | 23,000 (0.39) <sup>vap</sup>  | LQM S4UL   |
|                                        |                                                | 6%   | 26                        | 6,700                        | 3.9     | 110,000                        | 13,000               | 24,000 (0.48) <sup>vap</sup>  | LQM S4UL   |
| Pesticides                             | Aldrin                                         | 1%   | 5.7                       | 7.3                          | 3.2     | 170                            | 18                   | 30                            | LQM S4UL   |
|                                        |                                                | 2.5% | 6.6                       | 7.4                          | 6.1     | 170                            | 18                   | 31                            | LQM S4UL   |
|                                        |                                                | 6%   | 7.1                       | 7.5                          | 9.8     | 170                            | 18                   | 31                            | LQM S4UL   |
|                                        | Dieldrin                                       | 1%   | 0.97                      | 7.0                          | 0.17    | 170                            | 18                   | 30                            | LQM S4UL   |
|                                        |                                                | 2.5% | 2.0                       | 7.3                          | 0.41    | 170                            | 18                   | 30                            | LQM S4UL   |
|                                        |                                                | 6%   | 3.5                       | 7.4                          | 0.96    | 170                            | 18                   | 31                            | LQM S4UL   |
|                                        | Atrazine                                       | 1%   | 3.3                       | 610                          | 0.5     | 9,300                          | 1,200                | 2,300                         | LQM S4UL   |
|                                        |                                                | 2.5% | 7.8                       | 620                          | 1.2     | 9,400                          | 1,200                | 2,400                         | LQM S4UL   |
|                                        |                                                | 6%   | 17.4                      | 620                          | 2.7     | 9,400                          | 1,200                | 2,400                         | LQM S4UL   |
|                                        | Dichlorvos                                     | 1%   | 3.2E-02                   | 6.4                          | 4.9E-03 | 140                            | 16                   | 26                            | LQM S4UL   |
|                                        |                                                | 2.5% | 6.6E-02                   | 6.5                          | 1.0E-02 | 140                            | 16                   | 26                            | LQM S4UL   |
|                                        |                                                | 6%   | 0.14                      | 6.6                          | 2.2E-02 | 140                            | 16                   | 27                            | LQM S4UL   |
|                                        | Endosulfans (2 isomers)                        | 1%   | 7.4                       | 160 (3.0E-03) <sup>vap</sup> | 1.2     | 5,600 (3.0E-03) <sup>vap</sup> | 1,200                | 2,300                         | LQM S4UL   |
|                                        |                                                | 2.5% | 18                        | 280 (7.0E-03) <sup>vap</sup> | 2.9     | 7,400 (7.0E-03) <sup>vap</sup> | 1,200                | 2,400                         | LQM S4UL   |
|                                        |                                                | 6%   | 41                        | 410 (1.6E-02) <sup>vap</sup> | 6.8     | 8,400 (1.6E-02) <sup>vap</sup> | 1,200                | 2,500                         | LQM S4UL   |
|                                        | Hexachlorocyclohexane (3 isomers), inc Lindane | 1%   | 8.5E-02                   | 3.7                          | 1.3E-02 | 65                             | 8.1                  | 15                            | LQM S4UL   |
|                                        |                                                | 2.5% | 0.2                       | 3.8                          | 3.2E-02 | 65                             | 8.1                  | 15                            | LQM S4UL   |
|                                        |                                                | 6%   | 0.46                      | 3.8                          | 7.7E-02 | 65                             | 8.1                  | 16                            | LQM S4UL   |
| Chlorobenzenes                         | Chlorobenzene                                  | 1%   | 0.46                      | 0.46                         | 5.9     | 56                             | 11,000               | 1,300 (675) <sup>sol</sup>    | LQM S4UL   |
|                                        |                                                | 2.5% | 1.0                       | 1.0                          | 14      | 130                            | 13,000               | 2,000 (1,520) <sup>sol</sup>  | LQM S4UL   |
|                                        |                                                | 6%   | 2.4                       | 2.4                          | 32      | 290                            | 14,000               | 2,900                         | LQM S4UL   |
|                                        | Dichlorobenzenes (3 isomers)                   | 1%   | 23                        | 24                           | 94      | 2,000 (571) <sup>sol</sup>     | 90,000               | 24,000 (571) <sup>sol</sup>   | LQM S4UL   |
|                                        |                                                | 2.5% | 55                        | 57                           | 230     | 4,800 (1,370) <sup>sol</sup>   | 95,000               | 36,000 (1,370) <sup>sol</sup> | LQM S4UL   |
|                                        |                                                | 6%   | 130                       | 130                          | 540     | 11,000 (3,240) <sup>sol</sup>  | 98,000               | 51,000 (3,270) <sup>sol</sup> | LQM S4UL   |
|                                        | Trichlorobenzenes (3 isomers)                  | 1%   | 2.6                       | 2.6                          | 55      | 220                            | 15,000               | 1,700 (318) <sup>vap</sup>    | LQM S4UL   |
|                                        |                                                | 2.5% | 6.4                       | 6.4                          | 140     | 530                            | 17,000               | 2,600 (786) <sup>vap</sup>    | LQM S4UL   |
|                                        |                                                | 6%   | 15                        | 15                           | 320     | 1,300                          | 19,000               | 4,000 (1,880) <sup>vap</sup>  | LQM S4UL   |
|                                        | Tetrachlorobenzenes (3 isomers)                | 1%   | 0.66                      | 0.75                         | 0.38    | 49 (39.4) <sup>vap</sup>       | 78                   | 110 (39) <sup>vap</sup>       | LQM S4UL   |
|                                        |                                                | 2.5% | 1.6                       | 1.9                          | 0.90    | 120 (98.1) <sup>vap</sup>      | 79                   | 120                           | LQM S4UL   |
|                                        |                                                | 6%   | 3.7                       | 4.3                          | 2.2     | 240 (235) <sup>vap</sup>       | 79                   | 130                           | LQM S4UL   |
|                                        | Pentachlorobenzene                             | 1%   | 5.8                       | 19                           | 1.2     | 640 (43.0) <sup>sol</sup>      | 100                  | 190                           | LQM S4UL   |
|                                        |                                                | 2.5% | 12                        | 30                           | 3.1     | 770 (107) <sup>sol</sup>       | 100                  | 190                           | LQM S4UL   |
|                                        |                                                | 6%   | 22                        | 38                           | 7.0     | 830                            | 100                  | 190                           | LQM S4UL   |
|                                        | Hexachlorobenzene                              | 1%   | 1.8 (0.20) <sup>vap</sup> | 4.1 (0.20) <sup>vap</sup>    | 0.47    | 110 (0.20) <sup>vap</sup>      | 16                   | 30                            | LQM S4UL   |
|                                        |                                                | 2.5% | 3.3 (0.50) <sup>vap</sup> | 5.7 (0.50) <sup>vap</sup>    | 1.1     | 120                            | 16                   | 30                            | LQM S4UL   |
|                                        |                                                | 6%   | 4.9                       | 6.7 (1.2) <sup>vap</sup>     | 2.5     | 120                            | 16                   | 30                            | LQM S4UL   |

# Generic Assessment Criteria Values

| Contaminant                                                                                                                                                 |                             | SOM  | Res +             | Res -                    | Allot.            | Comm.                         | <sup>POS</sup> resi           | <sup>POS</sup> park          | Source   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|------|-------------------|--------------------------|-------------------|-------------------------------|-------------------------------|------------------------------|----------|
| Chlorophenol                                                                                                                                                | Chlorophenols (4 congeners) | 1%   | 0.87 <sup>g</sup> | 94                       | 0.13 <sup>g</sup> | 3,500                         | 620                           | 1,100                        | LQM S4UL |
|                                                                                                                                                             |                             | 2.5% | 2.0               | 150                      | 0.30              | 4,000                         | 620                           | 1,100                        | LQM S4UL |
|                                                                                                                                                             |                             | 6%   | 4.5               | 210                      | 0.70              | 4,300                         | 620                           | 1,100                        | LQM S4UL |
|                                                                                                                                                             | Pentachlorophenol           | 1%   | 0.22              | 27 (16.4) <sup>vap</sup> | 3.0E-02           | 400                           | 60                            | 110                          | LQM S4UL |
|                                                                                                                                                             |                             | 2.5% | 0.52              | 29                       | 8.0E-02           | 400                           | 60                            | 120                          | LQM S4UL |
|                                                                                                                                                             |                             | 6%   | 1.2               | 31                       | 0.19              | 400                           | 60                            | 120                          | LQM S4UL |
| Others                                                                                                                                                      | Carbon Disulphide           | 1%   | 0.14              | 0.14                     | 4.8               | 11                            | 11,000                        | 1,300                        | LQM S4UL |
|                                                                                                                                                             |                             | 2.5% | 0.29              | 0.29                     | 10                | 22                            | 11,000                        | 1,900                        | LQM S4UL |
|                                                                                                                                                             |                             | 6%   | 0.62              | 0.62                     | 23                | 47                            | 11,000                        | 2,700                        | LQM S4UL |
|                                                                                                                                                             | Hexachlorobutadiene         | 1%   | 0.29              | 0.32                     | 0.25              | 31                            | 25                            | 48                           | LQM S4UL |
|                                                                                                                                                             |                             | 2.5% | 0.7               | 0.78                     | 0.61              | 66                            | 25                            | 50                           | LQM S4UL |
|                                                                                                                                                             |                             | 6%   | 1.6               | 1.8                      | 1.4               | 120                           | 25                            | 51                           | LQM S4UL |
|                                                                                                                                                             | Phenol                      | 1%   | 120               | 440 (460)                | 23                | 440 <sup>dir</sup> (26,000)   | 440 <sup>dir</sup> (10,000)   | 440 <sup>dir</sup> (7,600)   | LQM S4UL |
|                                                                                                                                                             |                             | 2.5% | 200               | 690                      | 42                | 690 <sup>dir</sup> (30,000)   | 690 <sup>dir</sup> (10,000)   | 690 <sup>dir</sup> (8,300)   | LQM S4UL |
|                                                                                                                                                             |                             | 6%   | 380               | 1,200                    | 83                | 1,300 <sup>dir</sup> (34,000) | 1,300 <sup>dir</sup> (10,000) | 1,300 <sup>dir</sup> (9,300) | LQM S4UL |
| sol/vap = solubility/vapour limit (potentially use if free product identified, although highly conservative)                                                |                             |      |                   |                          |                   |                               |                               |                              |          |
| * = naphthalene C4SL exceeds the CLEA calculated soil saturation concentration (76 mg kg-1 for 1% SOM, 183 mg kg-1 for 2.5% SOM and 432 mg kg-1 for 6% SOM) |                             |      |                   |                          |                   |                               |                               |                              |          |
| f = oral, dermal and inhalation exposures compared to oral HCV                                                                                              |                             |      |                   |                          |                   |                               |                               |                              |          |
| dir = S4ULs based on threshold protective of direct skin contact with phenol )brackets long term exposure for illustration purposes)                        |                             |      |                   |                          |                   |                               |                               |                              |          |
| g = derived based on 2,3,4-tetrachlorophenol                                                                                                                |                             |      |                   |                          |                   |                               |                               |                              |          |

## Appendix D - References

<sup>1</sup><https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm/lcrm-stage-3-remediation-and-verification>

<sup>2</sup> CIRIA (2014). "Asbestos in Soil and Made Ground: A Guide to Understanding and Managing Risks". C733.

<sup>3</sup> HSE (2012). "Removing Asbestos Cement (AC) Debris." A11 Asbestos Essential – Non-licenced Tasks.

<sup>4</sup> CIRIA R97. "Trenching Practice 2<sup>nd</sup> Edition". CIRIA 1983.

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<sup>6</sup> YALPAG (2021). "Verification Requirements for Cover Systems: Technical Guidance for Developers, Landowners and Consultants." Yorkshire and Lincolnshire Pollution Advisory Group. V. 4.1-June 2021.

<sup>7</sup> DEFRA, December 2014, "Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination", SP1010, Policy Companion Document.

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<sup>9</sup> Environment Agency, January 2009, "Updated technical background to the CLEA model", Science Report SC050021/SR3.

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<sup>12</sup> Environment Agency, November 2008, "Compilation of data for priority organic pollutants for derivation of Soil Guideline Values", Science Report SC050021/SR7.

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