# 110 The Site

**171*** **Trees (Woodland Areas):** Removal of trees to woodland areas shall be undertaken in accordance with Appendix B.

**181*** **Undergrowth (Woodland Areas):** Removal of trees to woodland areas shall be undertaken in accordance with Appendix B.

**182*** **Japanese Knotweed/Giant Hogweed:** Japanese Knotweed is an invasive, non-native plant species. The Wildlife and Countryside Act (1981) made it illegal to spread Japanese Knotweed and guidance on the management of Japanese Knotweed on development sites is given in the Environment Agency's (EA) code of practice, 2001.

The MC is responsible for ensuring that, if identified on site, Japanese Knotweed is not spread across the site. There are a variety of methods available for treating infested areas including spraying with herbicides or digging, spraying and removal to land fill. The MC is responsible for selecting a method of treatment and obtaining approval for the selected method from the Local Authority and Environment Agency.


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# 205 Excavating

**222*** **Topsoil (Woodland Areas)**: Topsoil excavation, handling and management in woodland areas shall be undertaken in accordance with Appendix B.

**225*** **Handling Topsoil (Non-Woodland Areas)**: The following requirements shall be complied with:

- Where aggressive weeds as included in the Weeds Act – Section 2 or the Wildlife and Countryside Act – Schedule 9 – Part 2 are encountered, instructions should be obtained prior to moving topsoil. (See also Clause 181 Japanese Knotweed/Giant Hogweed).
- Earthmoving equipment shall be selected and used to minimize disturbance, trafficking and compaction of topsoil.
- On no account should topsoil be mixed with:
    a) Subsoil, stone, hardcore, rubbish or material from demolition work.
    b) Oil, fuel, cement or other substances harmful to plant growth.
    c) Other grades of topsoil.
- Multiple handling should be kept to a minimum. Where practicable topsoil should be used immediately after stripping.
- Topsoil handling should be undertaken in the driest condition possible. It should not be handled during or after heavy rainfall or when it is wetter than the plastic limit defined by BS 3882 Annex N2.

**330*** **Unrecorded Features:** Where old foundations, beds, basements, filling, tanks, service pipes, drains, hotspots of soil contamination etc. not shown on the drawings are encountered, obtain instructions before proceeding. See also Clause 406.


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# 400 Disposal of Materials

**400*** **General:** 'Suitable material' comprises all that which is acceptable to the MC in accordance with this specification. "Unsuitable material' is defined in Clause 510.

- No excavated suitable material to be removed from the site unless this suits the MC's operational procedure and then the MC is to make good any subsequent deficit at his own expense.
- Where the excavation reveals a combination of suitable and unsuitable materials the MC is to propose the methods by which suitable material may be excavated without contamination by unsuitable materials.

**405** **Contaminated Soils:** Where surplus soils for disposal are chemically contaminated, the MC shall be responsible for disposal of these materials at a suitably licensed landfill and all associated issues such as consignment notes and Environmental Protection Act Section 34 Duty of Care documentation. The MC shall be deemed the producer and holder of the waste and shall be responsible for classifying the materials for disposal to landfill. The WC shall be responsible for carrying out any further soil contaminant testing and WAC testing to enable classification of the waste in accordance with current regulatory guidance and the requirements of the receiving landfill.

The MC shall prepare an earthworks spoil management strategy which shall take account of the range of waste types expected to be encountered and set out any proposed sampling and testing regime for waste classification. The strategy shall include consideration of stockpile management, measures and working methods to protect site worker health and safety and the environment, and working methods to minimise the degree of intermixing of wastes of different classes and to minimise disposal costs.

~~The MC should check with HM Revenue & Customs, the client and all interested parties whether the site is registered with HMRC for landfill tax exemption. Where hotspots of contaminated materials are to be removed and disposed of to landfill, any exemption from landfill tax granted by HMRC shall be reflected in the rates for disposal of these materials. The volume of material covered by the exemption shall reflect the quantities indicated on the drawings plus a contingency of 15%.~~ [Phase 1 element removed]

**406*** **Unrecorded Contaminated Soils:** Where materials that appear to be contaminated (either visually or on the basis of odour) are encountered during the excavation works the MC shall be responsible for carrying out laboratory testing to enable the materials to be classified for hazard assessment and waste disposal purposes, for disposal to suitably licensed tip as appropriate, and all associated issues such as consignment notes and Environmental Protection Act Section 34 Duty of Care documentation. Such work is to be carried out by a suitably qualified professional.


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# 500 Filling

**510* Unsuitable Materials:**

- Do not import or use fill materials which would, either in themselves or in combination with other materials or ground water, give rise to a health hazard, pollution to the environment, damage to building structures or instability in the filling.

- **Imported** fill materials must not contain any contaminant in the suite listed below that is in excess of its Specified Trigger Concentration:

| Determinand | Soil Concentration | Soil Leachate Concentration |
|---|---|---|
| Arsenic | 79 mg/kg | 50 µg/l |
| Cadmium | 30 mg/kg | 5 µg/l |
| Chromium (total) | 200 mg/kg | 50 µg/l |
| Lead | 450 mg/kg | 50 µg/l |
| Mercury | 15 mg/kg | 1 µg/l |
| Selenium | 260 mg/kg | 10 µg/l |
| Copper | 190 mg/kg | 2000 µg/l |
| Nickel | 130 mg/kg | 50 µg/l |
| ~~Zinc (Phase 1)~~ | ~~300 mg/kg~~ | ~~75 µg/l~~ |
| Zinc (Phase 3) | 330 mg/kg | 3000 µg/l |
| TPH as $C_{>10}$-$C_{40}$ | 500 mg/kg | 10 µg/l |
| Polycyclic Aromatic Hydrocarbons (PAH USEPA16) | 100 mg/kg | 10 µg/l |
| Naphthalene | 9.2 mg/kg | 10 µg/l |
| Benzo(a)pyrene | 3.3 mg/kg | - |
| Phenols | 5 mg/kg | 100 µg/l |
| Free Cyanide | 25 mg/kg | 50 µg/l |
| Sulphate | 2000 mg/kg | 250 mg/l |
| ~~pH (Phase 1)~~ | ~~6<pH<8~~ | 5.5<pH<9.5 |
| pH (Phase 3) | 5<pH<9 | 5.5<pH<9.5 |
| Asbestos | None detectable* | - |

Notes: Leachate testing will be the NRA Method.

*No free fibres. Cement-bound asbestos <0.1% of total material volume.

Key to changes: ~~Phase 1~~ element removed/replace with Phase 3 element.


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- **Site won** fill materials must not contain any contaminant in the suite listed below that is in excess of its Specified Trigger Concentration:

| Determinand | Soil Concentration | Soil Leachate Concentration |
|---|---|---|
| Arsenic | 79 mg/kg | 50 µg/l |
| Cadmium | 30 mg/kg | 5 µg/l |
| Chromium (total) | 200 mg/kg | 50 µg/l |
| Lead | 450 mg/kg | 50 µg/l |
| Mercury | 15 mg/kg | 1 µg/l |
| Selenium | 260 mg/kg | 10 µg/l |
| Copper | 190 mg/kg | 2000 µg/l |
| Nickel | 130 mg/kg | 50 µg/l |
| ~~Zinc (Phase 1)~~ | ~~300 mg/kg~~ | ~~75 µg/l~~ |
| Zinc | 330 mg/kg | 3000 µg/l |
| TPH as $C_{>10}$-$C_{40}$ | 500 mg/kg | 10 µg/l |
| Polycyclic Aromatic Hydrocarbons (PAH USEPA16) | 100 mg/kg | 10 µg/l |
| Naphthalene | 9.2 mg/kg | 10 µg/l |
| Benzo(a)pyrene | 3.3 mg/kg | - |
| Phenols | 5 mg/kg | 100 µg/l |
| Free Cyanide | 25 mg/kg | 50 µg/l |
| ~~Sulphate~~ | ~~2000 mg/kg~~ | ~~250 mg/l~~ |
| ~~pH~~ | ~~5<pH<9~~ | ~~5.5<pH<9.5~~ |
| Asbestos | None detectable* | - |

Notes: Leachate testing will be the NRA Method.

*No free fibres. Cement-bound asbestos <0.1% of total material volume.

Key to changes: ~~Phase 1~~ element removed/replace with Phase 3 element.

- Any materials arising or imported that appear suspect in terms of contamination based on either appearance or smell shall be stockpiled separately and tested for the contaminant suite listed above in addition to any other appropriate contaminant as indicated by appearance or by smell and accepted into the Works or disposed of off site as appropriate.
- Soluble sulphate content ($SO_4$) of imported materials for filling under concrete slabs or within 1 m of substructures must not exceed 1.2 g/litre when tested BS 1377:Part 3, Clause 5 using a 2:1 water-soil extract.


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- Other unsuitable materials include: material from marshes or bogs, peat, logs, stumps, slurry, mud and perishable material, material susceptible to spontaneous combustion, material in a frozen condition, clays of liquid limit exceeding 80% and/or plasticity index exceeding 55, material with excessive moisture content.
- See also Clause 100.


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# 605 Acceptance of Suitable Fill

**605 Acceptance of Suitable Fill**

**For all imported fill unless the materials are naturally derived as-dug soils, testing shall be carried out to demonstrate that no contaminant listed in the suite given in Clause 510 is in excess of its Trigger Concentration. This testing shall be carried out at a rate of 1 test per 200 $m^3$ of placed fill material. In addition, any materials arising or imported that appear suspect in terms of contamination based on either appearance or smell shall be stockpiled separately and tested for the contaminant suite listed in Clause 510 and either accepted into the Works or disposed of off site as appropriate.**

During placement of **General Fill** the MC is also required to provide daily records of testing of the material placed to show compliance with the Specification. The minimum requirements are:

**Grading (BS1377: Part 2, Method 9.2)**: At least once a day or one test for every 500 $m^3$ placed.

**Moisture Content and undrained remoulded shear strength (cohesive materials) (BS1377: Part 2, Method 3.2; and Part 7, Method 8):** Three times a day or one test for every 200 $m^3$ placed.

**Plasticity Tests (BS1377: Part 2, Methods 4.3 and 5)**: One test per day for each source or for every 500 $m^3$ placed.

During placement of **Structural Fill** the MC is also required to provide daily records of testing of the material placed to show compliance with the Specification. The minimum requirements are:

**Grading (BS1377: Part 2, Method 9.2)**: At least once a day or one test for every 50 $m^3$ placed.

**Moisture Content and undrained remoulded shear strength (cohesive materials) (BS1377: Part 2, Method 3.2; and Part 7, Method 8):** Three times a day or one test for every 20 $m^3$ placed.

**Plasticity Tests (BS1377: Part 2, Methods 4.3 and 5)**: One test per day for each source or for every 20 $m^3$ placed.

**Los Angeles Test (BS EN 1097-2):** One test every 3 days or for every 50 $m^3$ placed.

**End product (structural fill only) (BS1377: Part 9, Method 2.2)**: One sand replacement density test for each compacted layer or each 20 $m^3$ placed.

Note: For each element cited above the option giving the greatest number of tests shall apply.


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**610* General Landscape Filling:**

**Definition:** Fill to soft landscape areas only.

- Materials arising from the excavations or imported, but excluding unsuitable materials as defined in Clause 510, with a maximum particle size of 150 mm.
- Lay in layers not more than 200 mm thick and consolidate each layer with the earthmoving plant.


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# 630 Compacted Structural Filling

**660 Deterioration of Fill Materials:**

If the material to be deposited as fill subsequently reaches a condition where it cannot be compacted to the requirements of this specification the MC shall:

- make good by removing the material from site until it is in a suitable condition for reuse and/or replaced with suitable material, or
- make good the material by mechanical or chemical means, or
- cease work until the physical condition of the material is such that it can be compacted as described in this specification.


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# 800 Topsoil Areas

**850* Contamination:**

Do not use topsoil contaminated with subsoil, rubbish, oil-based products, or other materials toxic to plant life. Dispose of contaminated topsoil as instructed.

**Imported topsoil** for use as fill to the top metre (if required) on the site will be tested for the contaminant suite listed below to ensure that contaminant threshold levels are not exceeded.

**Site won topsoil** for use as fill to the top metre shall also be tested for the contaminant suite defined below to ensure that contaminant threshold levels are not exceeded.

Maximum permissible contaminant concentrations in **imported and site won topsoil (**soil concentrations only will be determined):

| **Determinand** | **Soil Concentration** | **Soil Leachate Concentration** |
|---|---|---|
| Arsenic | 79 mg/kg | Not Required |
| Cadmium | 30 mg/kg | Not Required |
| Chromium (total) | 200 mg/kg | Not Required |
| Lead | 450 mg/kg | Not Required |
| Mercury | 15 mg/kg | Not Required |
| Selenium | 260 mg/kg | Not Required |
| Copper | 190 mg/kg | Not Required |
| Nickel | 130 mg/kg | Not Required |
| ~~Zinc (Phase 1)~~ | ~~300 mg/kg~~ | Not Required |
| Zinc (Phase 3) | 330 mg/kg | Not Required |
| TPH as $C_{>10}$-$C_{40}$ | 500 mg/kg | Not Required |
| Polycyclic Aromatic Hydrocarbons (PAH USEPA16) | 100 mg/kg | Not Required |
| Naphthalene | 9.2 mg/kg | Not Required |
| Benzo(a)pyrene | 3.3 mg/kg | Not Required |
| Phenol Index | 5 mg/kg | Not Required |
| Free Cyanide | 25 mg/kg | Not Required |
| ~~Sulphate~~ | ~~2000 mg/kg~~ | ~~Not Required~~ |
| pH | 5<pH<9 | Not Required |
| Asbestos | None detectable* | Not Required |

Notes: *No free fibres. Cement-bound asbestos <0.1% of total material volume.

Key to changes: ~~Phase 1~~ element removed/replace with Phase 3 element.

The rate of validation testing on **imported topsoil** will be 1 sample per 250 $m^3$ of backfill.

The rate of validation testing on **site won topsoil** will be 10 No. representative samples from stockpile.


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# Appendix A – Validation Strategy

### A/1 Validation Strategy

As soon as practicable after the removal of any anticipated or unexpected 'hot spots' a **Validation Report** shall be prepared and submitted by the MC and agreed with the relevant Local Authority Planning Development Department.

The validation strategy shall be as follows:

- Anticipated areas of elevated concentrations or 'hot spots' shall be excavated and removed to at least 1.00 m beyond any visual or olfactory (odorous) indication of contamination.
- Samples of the surrounding soil will be taken from the excavation formed and tested for the suite of determinands listed in Clause 510 in addition to any other appropriate contaminant as indicated by appearance or by smell.
- If the chemical concentrations of the soil samples are less than the concentrations recorded in Clause 510 or other appropriate guidance in respect of other appropriate contaminant, the elevated concentrations or 'hot spot' can be considered to have been removed and no further remedial action is required.
- If the chemical concentrations of the soil samples are greater than the concentrations recorded in Clause 510 or other appropriate guidance in respect of other appropriate contaminant, further excavation is required and the sequence of sampling and testing should be repeated. Incremental excavation and testing should continue until the chemical concentrations encountered are less than the concentrations recorded in Clause 510 or other appropriate guidance in respect of other appropriate contaminant.
- During this procedure, the following information should be collected and recorded:
  - The exact extent of each phase of excavation should be recorded using 3D topographical surveying techniques.
  - The exact position and depth of each sample taken should be recorded using 3D topographical surveying techniques.
  - The samples should be given a unique reference number.
  - The laboratory testing results for each unique sample shall be recorded.
  - A photographic record of each phase of excavation and sampling will be collected and recorded.
- A general photographic record of the works should also be collected and recorded to provide a general record of the nature and characteristics of the materials encountered and/or laid to form formations etc. Where practicable, the photographic record should be cross referenced with any chemical testing available for the material type.

A validation report should be prepared, comprising substantiating completion documentation to include type of documentation listed above and photographic records in addition to Environmental Protection Act 1990 Section 34 Duty of Care documentation relating to waste disposal of the material removed from site.


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### A/2 Validation Documentation Requirements

The following documentation shall be prepared by the MC and submitted to the relevant Local Authority Planning Development Department.

- Plan or plans showing earthworks movement of materials on site (cut and fill) and imported if appropriate.
- Plan or plans showing the location of any 'hot spots' located, if any, or confirmation that none were encountered.
- Plan or plans showing location of chemical testing undertaken as appropriate plus supporting information.
- Plan or plans showing surface finishes and thickness of build-ups, topsoil or clean cover as appropriate.
- Plan or plans showing the location of any hotspots encountered during service trench excavation, if any, and plan sections of remedial measures undertaken for water pipe provision.
- Appropriate records of material removed from site including testing records.
- Appropriate records of material imported to site including testing records.
- Appropriate records of topsoil imported to site including testing records.
- Appropriate photographic records of the earthworks plus any specific areas of interest ('hotspots', tanks etc).
- Records of any water control of groundwater that may have been contaminated, if any, or confirmation that none were encountered.
- Other records, if appropriate, not included in above summary.
- A statement confirming the earthworks was undertaken in accordance with this specification.


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**NEW APPENDIX ADDED FOR WOODLAND AREA MANAGEMENT**

# Appendix B – Woodland 'Topsoil' Reprocessing Strategy

The proposed development site includes an area of existing woodland which needs to be removed to facilitate construction of the development. The area of existing woodland is indicated in drawing BP4L_WOM_BUR_SK91_SW_LL05 - Rev P01.

The WC shall comply with all the requirements of this Specification when clearing the woodland area in addition to the requirements outlined below.

**B/1 Agreements and Approvals**

The MC shall be responsible for gaining all the required agreements and approvals with the Environment Agency and Local Authority which will include but not limited to the preparation of a Materials Management Plan in accordance with CL:AIRE 'The Definition of Waste: Development Industry Code of Practice' framework.

The Materials Management Plan shall be prepared by the MC and signed off by a CL:AIRE registered qualified person before being submitted to the Environment Agency for their information. Woodland removal should not commence until the qualified person has signed off the Materials Management Plan and this is received in writing.

The requirements of the Local Authority should be obtained in writing to ensure compliance. Woodland removal should not commence until the Local Authority approval is received in writing.

**B/2 Ecological Requirements and Restrictions**

Any ecological requirements and restrictions regarding woodland removal should be undertaken in accordance with the requirements of any scheme specific ecological/environmental reports[1+2] and verified with the Local Authority.

Planting requirements will be as specified by the Landscape Architect.

Restrictions on woodland removal include but are not limited to the avoidance of bird nesting season(s) which for this scheme is between March and August inclusive thus significant tree removal should be undertaken between 1 September 2010 and 28 February 2011. Removal at any other time should only take place under the direction from a suitably qualified ecologist.

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[1] GL Hearn Limited report entitled '*Ecological Assessment – Former Darfield Colliery Site, South Yorkshire*' (Ref: TWO0044/005), dated November 2007, prepared on behalf of Barnsley MBC.

[2] GL Hearn Limited report entitled '*A New School for Foulstone, Wombwell and Darfield – Revised Environmental Statement*' (Ref: None), dated September 2009, prepared on behalf of Barnsley MBC.


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**B/3 Removal of Vegetation**

All trees are to be cut down such that the remaining stump tops are as close as practicable to existing ground level. All trees are to be processed, shredded and chipped and all resulting material is to be combined with root and screened soil material as detailed below.

All undergrowth, bushes and shrubs shall be cleared to existing ground level. All such undergrowth material shall be processed and shredded as far as practicable and combined with root and screened soil material as detailed below.

**B/4 Surface Strip and Grubbing Out**

Current indications are that root growth to the existing trees within the woodland area is restricted to approximately 500 mm to 650 mm below existing ground level. Investigations indicate that the upper 300 mm is woodland topsoil with roots penetrating the underlying material to the approximate depth indicated above.

The surface strip and grubbing out of root material will be undertaken as one operation to the full depth of root growth as indicated above (envisaged to comprise 40% topsoil / 50% underlying material / 10% wood material) and stockpiled ready for processing.

**B/5 Processing of Root Material**

The processing, shredding and chipping of the root material shall be carried out using industry standard equipment to create a reasonably uniform woodland growing medium. The processing should be undertaken concurrently with the surface strip operation and the reprocessed growing medium material shall be stockpiled to allow chemical testing prior to use.

The reprocessed growing medium material created should be sampled at a frequency of 1 No. sample for every 250 $m^3$ of material and the following testing shall be undertaken:

- Chemical testing in accordance with Clause 850*.
- Chemical testing in accordance with BS: 3882 to establish suitability as growing medium, to include soil pH, available phosphorus, potassium and magnesium, total nitrogen, calcium carbonate electrical conductivity and exchangeable sodium as required.

All processed growing medium material compliant with the chemical testing requirements listed above shall be handled and stored in accordance with BS: 4428 where appropriate.

Material not complying with the chemical requirements of Clause 850* shall be removed and stockpiled separately to allow further assessment to be made.

Material not complying with the nutrient requirements will require appropriate treatment.


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### B/6 Treatment of Growing Medium

Material not complying with the nutrient requirements will be treated to meet the minimum/maximum requirements of BS: 3882 '*general purpose grade*' topsoil and any treated batch thoroughly mixed with the stockpile prior to laying to provide a reasonably consistent growing medium.

Removal from stockpile, transport and placing of this material should provide further mixing and greater uniformity. The material should be thoroughly mixed as far as is practicable.

### B/7 Placement of Growing Medium

The reprocessed growing medium is to be placed in accordance with drawings BP4L_WOM_PLI_DR_91_SW_00_01, ..._08, ..._09. The material shall be categorized as topsoil within BS: 4428 and handled according to the standards set out within the BS: 4428.

Refer to Landscape Architect's Specification for placement requirements.


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