

Barry Chinn Associates Limited

BOUYGUES E&S CONTRACTING UK LTD

# PRO LOGIS PARK Heathrow

Landscape Earthworks Specification  
19-10-2023

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## Q28

# Topsoil and soil ameliorants

### System outline

#### 135 Planting bed soil system

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1. Description: FOR SHRUB PLANTED AREAS
2. Composition
  - 2.1. Topsoil: 300mm depth of imported topsoil or site sourced topsoil (if available) as clause Q28/316.
  - 2.2. Subsoil:: 300mm depth of imported subsoil or site sourced subsoil (if available) as clause Q28/317.

#### 136 Planting bed soil system

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1. Description: FOR NATIVE HEDGE PLANTED AREAS
2. Composition
  - 2.1. Topsoil: 300mm depth of imported topsoil or site sourced topsoil (if available) as clause Q28/316.
  - 2.2. Subsoil:: 600mm depth of imported subsoil or site sourced subsoil (if available) as clause Q28/317.

#### 145 Plant pit backfilling soil system

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1. Description: FOR TREE PITS
2. Drawing:: Refer to dimensions provided in key on BCA 2345-23-02
3. Composition
  - 3.1. Topsoil: 300mm depth of imported or existing topsoil as Q28/317.
  - 3.2. Subsoil: Imported or existing subsoil as Q28/321,
  - 3.3. Drainage layer: 150mm depth of 10-20 mm gravel with geotextile layer
  - 3.4. Ameliorants: To be confirmed by topsoil testing.
  - 3.5. Accessories: Connection to surface water drainage system if required.

### Products

#### 300 Preparation materials generally

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1. Purity: Free of pests and disease.
2. Foreign matter: On visual inspection, free of fragments and roots of aggressive weeds, sticks, straw, subsoil, pieces of brick, concrete, glass, wire, large lumps of clay or vegetation, and the like.
3. Contamination: Do not use topsoil contaminated with subsoil, rubbish or other materials that are:
  - 3.1. Corrosive, explosive or flammable.
  - 3.2. Hazardous to human or animal life.
  - 3.3. Detrimental to healthy plant growth.
4. Subsoil: In areas to receive topsoil or planting media, do not use subsoil contaminated with the above materials.
5. Objectionable odour: None.
6. Give notice: If any evidence or symptoms of soil contamination are discovered on the site or in topsoil or planting media to be imported.

### 310 Materials not permitted

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1. **Materials:** Products containing peat

### 311 Imported topsoil assessment

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1. Each potential source of soil offered by the Contractor is to be initially assessed for approval and testing prior to delivery.
2. Each source shall be analysed by an approved soil science consultancy as clause Q28/614. A copy of this document, together with details of the proposed landscape design (drawing, planting list, etc), shall be provided with the samples for review by the soil scientist and for reference within the topsoil assessment report.
3. Each sample shall be truly representative of the topsoil/subsoil being offered. A composite sample shall be taken for every 250m<sup>3</sup> of topsoil being offered, with a minimum of 3 No. samples per source. Each composite sample is to be made up of 10 No. sub-samples taken from evenly spaced locations across the field / stockpile. The sub-samples shall be mixed together to form a 2kg composite sample.
4. The Contractor shall obtain a sample load of each approved topsoil source of not less than five cubic metres for inspection by the Contract Administrator. The accepted sample is to be retained on site for comparison with the subsequent loads.
5. Prior to inspection by the Contract Administrator the sample must have been analysed in accordance with the requirements of the topsoil analysis clause above and approved.

### 316 Imported topsoil (if required)

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1. Description: FOR TREE PITS, SHRUB AND NATIVE HEDGE PLANTED AREAS.
2. Quantity: provide as necessary to make up any deficiency of suitable topsoil existing on site to complete the work.
3. Imported topsoil shall have the following characteristics:
  - 3.1. Texture:  
Sand (0.063-2.00mm) - maximum 85%, minimum 50%  
Silt (0.002-0.063mm) - maximum 45%, minimum 5%  
Clay (< 0.002mm) - maximum 27%, minimum 5%
  - 3.2. Stone content:  
Stone content to be not more than 35% by dry weight of which the fraction 2 mm - 5 mm must not exceed 20% by dry weight. Maximum particle size in any dimension 50mm for trees and shrubs, and 20mm for turfing or seeding.
  - 3.3. Organic matter:  
Organic content to be 4-15% by dry weight to BS3882:2015 method.
  - 3.4. Soil Reaction:  
PH to be between 5.5 and 8.5.
  - 3.5. Electrical Conductivity Values:  
Conductivity to be between 100-1500 microsiemens per cm when expressed on a 1:2.5 (w/v) soil/water extract.  
Conductivity to be below 3300 microsiemens per cm when expressed on a 1:2 (w/v) soil/CaSO<sub>4</sub> extract.
  - 3.6. Nitrogen:  
Nitrogen (N) content to be not less than 0.15% by the Dumas method.
  - 3.7. Potassium:  
Extractable potassium (K) content to be between 240 – 1200 mg/kg by the MAFF Handbook RB 427 method.
  - 3.8. Magnesium:  
Extractable magnesium (Mg) content to be not less than 50 mg/kg by the MAFF Handbook RB 427 method.

- 3.9. Foreign Matter:  
Soil to be free from non-soil material, brick and other building materials and wastes, potential sharps, hydrocarbons, plant matter, roots of perennial weeds and any other foreign matter.
- 3.10. Structure:  
Soil to have a clearly defined crumb, granular or blocky structure and not to be waterlogged, anaerobic or over compacted.
- 3.11. Topsoil analysis:  
Testing certificate shall be provided in accordance with the requirements of clause Q28/611.
- 3.12. Potential Contaminants:  
The suite of tests specified in clause Q28/611 includes commonly occurring potential contaminants.  
In accordance with BS8601:2013 Clause 4.2, Notes 2 and 3: "*concentrations of contaminants shall not present excessive risk to human health or the environment*".  
The contaminants analysed should reflect the intended end use of the site where the topsoil is to be used, for example Commercial or Residential use. See Clause Q28/318A for list of trigger levels for commercial and residential criteria.  
Exceedance of relevant criteria should be reviewed by soil consultancy through quantitative risk assessment relating to site end use.

### 317 Imported subsoil (if required)

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1. Imported subsoil shall have the following characteristics:
- 1.1. Texture  
Sand (0.063-2.00mm) - maximum 90%, minimum 65%  
Silt (0.002-0.063mm) - maximum 35%, minimum 5%  
Clay (< 0.002mm) - maximum 20%, minimum 5%
- 1.2. Stone Content  
Stone content to be not more than 35% by dry weight. Maximum particle size in any dimension 75mm.
- 1.3. Organic Matter  
Organic content to be less than 1.5% by dry weight to BS8601:2013 method.
- 1.4. Soil Reaction  
pH to be between 5.5 and 8.5.
- 1.5. Electrical Conductivity Values  
Conductivity to be below 1500 microSeimens per cm when expressed on a 1:2.5 (w/v) soil/water extract.  
Conductivity to be below 3300 microSeimens per cm when expressed on a 1:2 (w/v) soil/CaSO<sub>4</sub> extract.
- 1.6. Foreign Matter  
Soil to be free from non-soil material, brick and other building materials and wastes, potential sharps, hydrocarbons, plant matter, roots of perennial weeds and any other foreign matter.
- 1.7. Structure  
Soil to have a clearly defined crumb, granular or blocky structure and not to be waterlogged, anaerobic or over compacted.
- 1.8. Potential Contaminants  
The Soil Analysis suite specified in Clause 6.0 includes commonly occurring potential contaminants. In accordance with BS8601:2013 Clause 4.2, Notes 2 and 3: "*concentrations of contaminants shall not present excessive risk to human health or the environment*". The contaminants analysed should reflect the intended end use of the site where the subsoil is to be used, for example residential or commercial use.  
(See Appendix A for list of Generic Assessment Criteria for commercial and residential use. Exceedance of relevant criteria should be reviewed by soil consultancy through quantitative risk assessment relating to site end use).

### 318 Potential contaminants

1. Refer to Appendix A or see below.
2. The following Generic Assessment Criteria (GAC) should be used as Tier 1 screening values for the assessment of topsoil and subsoil, unless Site-Specific Assessment Criteria (SSAC) are available for the site where the soil(s) is to be used. In circumstances where any of these values are exceeded, further risk assessment and/or testing should be undertaken to confirm the significance of the non-compliance.

#### 3. **Contaminants**

##### Commercial Residential

Inorganic Arsenic	<640	<37 mg/kg
Cadmium	<190	<11 mg/kg
Chromium III	<8600	<910 mg/kg
Chromium VI	<33	<6 mg/kg
Lead	<2330	<200 mg/kg
Inorganic Mercury	<58	<1.2 mg/kg
Selenium	<12000	<250 mg/kg
Copper	<100	<100 mg/kg
Nickel	<60	<60 mg/kg
Zinc	<200	<200 mg/kg
Soluble Boron	<3	<3 mg/kg
Total Cyanide	<20	<20 mg/kg
Phenol	<760	<550 mg/kg
Acenaphthene	<84000	<210 mg/kg
Acenaphthylene	<83000	<170 mg/kg
Anthracene	<520000	<2400 mg/kg
Benz[a]anthracene	<170	<7.2 mg/kg
Benzo[a]pyrene	<35	<2.2 mg/kg
Benzo[b]fluoranthene	<44	<2.6 mg/kg
Benzo[ghi]perylene	<3900	<320 mg/kg
Benzo[k] fluoranthene	<1200	<77 mg/kg
Chrysene	<350	<15 mg/kg
Dibenzo[ah]anthracene	<3.5	<0.24 mg/kg
Fluoranthene	<23000	<280 mg/kg
Fluorene	<63000	<170 mg/kg
Indeno[123-cd]pyrene	<500	<27 mg/kg
Naphthalene	<190	<2.3 mg/kg
Phenanthrene	<22000	<95 mg/kg
Pyrene	<54000	<620 mg/kg

#### 4. **\*Petroleum Hydrocarbons**

##### Commercial Residential

<u>Aliphatics</u>	mg/kg	mg/kg
EC 5-6	<3200	<42
EC >6-8	<7800	<100
EC >8-10	<2000	<27
EC >10-12	<9700	<130
EC >12-16	<59000	<1100
EC >16-35	<1600000	<65000

#### 5. **Aromatic Commercial Residential**

EC 5-7 (benzene)	<26000	<70
EC >7-8 (toluene)	<56000	<130
EC >8-10	<3500	<34
EC >10-12	<16000	<74
EC >12-16	<36000	<140
EC >16-21	< 28000	<260
EC >21-35	<28000	<1100

### 319 Source of topsoil or subsoil

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1. The Main Contractor shall advise the Landscape Contractor/Contract Administrator of the supply source and existing use of the topsoil and subsoil. If requested the Main Contractor shall take the Landscape Contractor/Contract Administrator to view the proposed topsoil/subsoil at source.

## Execution

### 607 Soil resource survey

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1. If a soil resource survey is not available:  
The Main Contractor shall appoint an approved soil science consultancy to carry out a soil resource survey of the site at the earliest opportunity and preferably prior to the topsoil strip.
2. The survey shall provide the necessary information to establish the locations and depths of existing site topsoil prior to stripping or excavating for reuse. The survey shall include chemical and physical soil analysis of topsoil and subsoil in accordance with the list of parameters given in clause ref 610 'Soil Analysis' below. A copy of this specification and where available the proposed planting list / drawings of the scheme shall be provided for reference within the soil survey report.
3. The results of the survey and laboratory analysis shall be presented in an interpretive report. The report shall comment on the suitability of the site topsoil and subsoil for the proposed landscape scheme, with reference the sizes and species of plants, turf, seed mixes chosen.
4. The report will take into account the implications that extensive earthworks and soil handling will have on soil quality, and shall identify the best quality soils for re-use where applicable. The report shall also provide recommendations to improve the soils, where necessary and if practically possible, including cultivation techniques and fertiliser, lime, compost application types and rates.

### 611 Soil Analysis

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1. Soil to be analysed: All existing and imported topsoil or subsoil to be used in landscape areas.
2. The Main Contractor shall provide a topsoil/subsoil analysis report from an approved soil science consultancy. Each composite topsoil/subsoil sample shall be placed in a plastic bag, labelled with name and details of origin and sent to the soil science consultancy with a request for the following tests to be carried out:
  - 2.1. Visual examination to record: Munsell colour, structure, consistency, stone size and shape, presence of any deleterious materials
  - 2.2. pH Value
  - 2.3. Electrical Conductivity (water and calcium sulphate extracts)
  - 2.4. Mechanical Analysis (clay, silt, sand)
  - 2.5. Stone Content (>2mm, >20mm, >50mm)
  - 2.6. Total Nitrogen (topsoil only)
  - 2.7. Extractable Phosphorus, Potassium & Magnesium (topsoil only)
  - 2.8. Organic Matter
  - 2.9. Heavy Metals - As Cd Cr Pb Hg Se Cu Ni Zn B
  - 2.10. Total Cyanide
  - 2.11. Phenol
  - 2.12. PAHs (speciated US EPA 16)
  - 2.13. Aliphatic and aromatic TPH banding (C5-C35)
3. The results shall be presented in an interpretive report which shall comment on the suitability of the topsoil/subsoil for the proposed landscape design. The report shall also provide recommendations to improve the topsoil/subsoil, where necessary, including compost, fertiliser and lime applications.
4. The Landscape Contractor/Contract Administrator may ask for additional tests (eg. permeability, detailed sand analysis, porosity), should it be considered necessary.

## 612 Approved soil science consultancies

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1. Approved soil consultants are:
  - 1.1. **Tim O'Hare Associates LLP**  
Howbery Park  
Wallingford  
Oxon  
OX10 8BA  
T: 01491 822653  
E: [tim.ohare@toha.co.uk](mailto:tim.ohare@toha.co.uk)  
W: [www.timohare-associates.com](http://www.timohare-associates.com)  
Contact: Tim O'Hare
  - 1.2. **Land Research Associates Ltd.**  
Lockington Hall  
Lockington  
Derby  
DE74 2RH  
T: 01509 670570  
E: [mike.palmer@lra.co.uk](mailto:mike.palmer@lra.co.uk) or [laura.thomas@lra.co.uk](mailto:laura.thomas@lra.co.uk)  
W: [www.lra.co.uk](http://www.lra.co.uk)  
Contact: Mike Palmer or Laura Thomas

## 620 Importing topsoil

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1. Give notice: Before stripping topsoil for transfer to site.
  - 1.1. Notice period: 7 days

## 625 Sample loads

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1. Description: FOR IMPORTED TOPSOIL
2. Deliver to site a sample load: of not less than 5 m<sup>3</sup>
3. Give notice: Allow inspection before making further deliveries to site. Retain for comparison with subsequent loads.
  - 3.1. Notice period: 2 days

## 642 Existing soil handling and preparation

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1. Where a soil resource survey report has been prepared the Contractor/Landscape Contractor shall follow the recommendations in the report with regard to preparation, stripping, handling and storage of any existing topsoil approved for re-use on the site.

## 645 Existing vegetation

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1. The Landscape Contractor/Contractor shall take the necessary measures to prevent damage to existing vegetation, and unless otherwise instructed by the Contract Administrator, retain existing levels beneath the canopy of existing trees.
2. Where so instructed by the Contract Administrator the Landscape Contractor/Contractor shall protect existing vegetation by the erection of protective fencing in accordance with BS 5837 2012 Trees in relation to design, demolition and construction – Recommendations.
3. Refer to drawing nos. for detail of tree removal, retention and protection.

## 646 Herbicide treatment

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1. Where subsoil or topsoil areas require weed clearance to be carried out.
2. Use of chemicals shall comply with the Plant Protection Products (Sustainable Use) Regulations 2012 and Codes of Practice prepared jointly by the Department for Environment, Food and Rural Affairs (DEFRA), the Health and Safety Commission (HSC) and the National Assembly for Wales



Environment, Planning and Countryside Department. All herbicides shall be on current list of approved products.

3. Storage, handling and application of chemicals shall be in accordance with the manufacturers' instructions. The Contractor shall be responsible for any damage caused by spray drift and will make good at own expense.
4. Sufficient time for herbicide to be effective shall be allowed to elapse between application of herbicide and the commencement of any stripping or grading works.

#### **647 Topsoil strip**

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1. The site topsoil which is to be retained for later use shall be stripped and stock piled. The following method shall be used:
  - 1.1. During suitable dry weather conditions the existing vegetation shall be treated with herbicide in accordance with the clause for herbicide treatment below.
  - 1.2. Clear site of foreign materials.
  - 1.3. During suitable dry weather conditions (ie when the topsoil is friable and not plastic) strip topsoil down to its full natural depth, taking care to avoid contamination with subsoil or foreign materials.

#### **648 Topsoil storage**

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1. Storage Period  
Topsoil for use on the site shall be stored for as short a period as practicable. Existing topsoil shall not be stored for more than 18 months.
2. Stockpile  
Topsoil stockpiles shall be graded to shallow falls over as large an area as practical, to a maximum height of 2 metres, unless otherwise instructed by the Soil Scientist.
3. Weed Control  
The Main Contractor shall carry out broad-leaved weed control to the topsoil storage mound using a suitable selective, translocated, non-residual herbicide spray. Herbicide spray to be carried out 3 no times during early May, early July and early September. Refer to clause Q28/646 for herbicide treatment.

#### **650 Notice**

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1. Give notice before
  - 1.1. Setting out.
  - 1.2. Spreading topsoil.
  - 1.3. Applying herbicide.
2. Period of notice: 2 weeks

#### **652 Formation level and subsoil preparation**

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1. Prior to preparation of formation level, the subsoil shall be completely cleared of all weed growth by the main contractor using an approved herbicide in accordance with the clause for herbicide treatment below.
2. The site shall be brought to formation level by the main contractor using an approved subsoil material. All soil handling should be carried out when the soil is sufficiently dry and not plastic.
3. The subsoil shall be decompacted to a depth of at least 300mm in grass and ornamental shrub areas and 300mm in woodland/thicket/hedge planting areas (increased to 600mm for heavy/ clay soils) to ensure the areas are free draining and be completely free of all rubbish, bricks and concrete.
4. For small planting beds and areas of restricted access, decompaction may be carried out by hand or a small (1-5 tonne) to medium sized (13 tonne) tracked excavator, fitted with a ripper tine attachment, shall be used. On larger, open areas a tractor mounted rigid tine harrow (300mm depth) or subsoiler (600mm depth) shall be used.

5. The base of tree pits should be decompacted to a depth of at least 300mm and checked to ensure that they are free draining.
6. The Main Contractor shall obtain the Contract Administrator's /Landscape Contractor's acceptance of formation levels and subsoil preparation prior to the commencement of topsoiling.

## **655 Mechanical tools**

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1. **Restrictions:** Do not use within 100 mm of tree and plant stems.

## **666 Subsoil surface preparation for:**

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1. **Description:** SHRUB PLANTED AREAS
2. **Standard:** In accordance with BS 3882.
3. **Depth:** Subsoil depth for shrub planted ed areas to be 300mm
4. **General:** Excavate and/ or place fill to required profiles and levels, as shown on earthworks drawings
5. **Loosening**
  - 5.1. When ground conditions are sufficiently dry to allow breaking up of soils, loosen thoroughly to specified depth
    - 5.1.1. Light and noncohesive subsoils: 150 mm
    - 5.1.2. Stiff clay and cohesive subsoils: 300 mm
    - 5.1.3. Rock and chalk subgrades: Lightly scarify to promote free drainage.
  - 5.2. **Wet conditions:** Do not loosen subsoils.
6. **Stones:** Immediately before spreading topsoil, remove stones larger than 75 mm.
7. **Remove from site:** Arisings, contaminants debris and builders rubble

## **667 Subsoil surface preparation for:**

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1. **Description:** NATIVE HEDGEROW PLANTED AREAS
2. **Standard:** In accordance with BS 3882.
3. **Depth:** Subsoil depth for thicket planted areas to be 600mm
4. **General:** Excavate and/ or place fill to required profiles and levels, as shown on earthworks drawings
5. **Loosening**
  - 5.1. When ground conditions are sufficiently dry to allow breaking up of soils, loosen thoroughly to specified depth
    - 5.1.1. Light and noncohesive subsoils: 300 mm
    - 5.1.2. Stiff clay and cohesive subsoils: 300 mm
    - 5.1.3. Rock and chalk subgrades: Lightly scarify to promote free drainage.
  - 5.2. **Wet conditions:** Do not loosen subsoils.
6. **Stones:** Immediately before spreading topsoil, remove stones larger than 75 mm.
7. **Remove from site:** Arisings, contaminants debris and builders rubble

## **668 Subsoil surface preparation for:**

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1. **Description:** WILDFLOWER AREAS
2. **Standard:** In accordance with BS 3882.
3. **Material:** well graded selected low fertility material which shall be suitable for the cultivation operations proposed, to achieve a fine tilth for seeding.
4. **Testing:** Proposed material may be tested to confirm that it is suitable for use for the specified seed mixes and free from contamination and injurious, notifiable or noxious weeds.

5. **Depth:** Subsoil depth for willflower seeded areas to be 300mm
6. **General:** Excavate and/ or place fill to required profiles and levels, as shown on earthworks drawings
7. **Loosening**
  - 7.1. When ground conditions are sufficiently dry to allow breaking up of soils, loosen thoroughly to specified depth
    - 7.1.1. Light and noncohesive subsoils: 200 mm
    - 7.1.2. Stiff clay and cohesive subsoils: 200 mm
    - 7.1.3. Rock and chalk subgrades: Lightly scarify to promote free drainage.
  - 7.2. **Wet conditions:** Do not loosen subsoils.
8. **Stones:** Subsoil finished surface for cultivation and seeding. Remove stones larger than 50 mm and ensure that levels of areas marry neatly with adjacent topsoiled areas. Subsoil areas shall be completely free of all large lumps of clay, rubbish, bricks and concrete.
9. **Remove from site:** Arisings, contaminants debris and builders rubble

## 670 Inspecting formations

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1. **Give notice:** Before spreading topsoil for all areas.
2. **Notice period:** 7 days

## 675 Preparation of undisturbed topsoil

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1. **Standard:** In accordance with BS 4428.
  - 1.1. **Grading and cultivation:** To suit cultivation operations specified in Q30 and Q31
2. **Hard ground:** Break up thoroughly.
3. **Retained trees::** Around existing retained trees care should be taken to avoid disturbance within the Root Protection Zone and cultivation depth and extent adjusted accordingly.
4. **Clearing:** Remove visible roots and large stones with a diameter greater than 50 mm.
5. **Areas covered with turf or thick sward:** Plough or dig over to full depth of topsoil.
6. **Fallow period (minimum):** One month
  - 6.1. **Weed control:** At appropriate times treat with a suitable translocated nonresidual herbicide.

## 680 Surplus topsoil to be retained

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1. **Generally:** Spread and level on site:
  - 1.1. **Locations:** To be confirmed on site
  - 1.2. **Protected areas:** Do not raise soil level within root spread of trees that are to be retained.

## 690 Topsoil storage heaps

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1. **Location:** Submit proposals
2. **Height (maximum):** 2.0 m
3. **Width (maximum):** to suit recommendations of soil scientist
  - 3.1. **Formation:** Loose tip and shape from the side only, without running machinery on the heap at any time.
4. **Protection**
  - 4.1. Do not place any other material on top of storage heaps.
  - 4.2. Do not allow construction plant to pass over storage heaps.
  - 4.3. Prevent compaction and contamination, by fencing and covering as appropriate.

## 700 Grading of topsoil

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1. **Topsoil condition:** Reasonably dry and workable.
2. **Contours:** Smooth and flowing, with falls for adequate drainage.
  - 2.1. **Hollows and ridges:** Not permitted.
3. **Give notice:** If required levels cannot be achieved by movement of existing soil.

## 704 Spreading topsoil

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1. **Soil Handling and Weather:**  
Soil handling operations should be carried out when soil is reasonably dry and non-plastic (friable) in consistency (at least 5% below the Lower Plastic Limit).
2. Topsoil shall not be unnecessarily compacted by trampling or trafficking by site machinery. Topsoil handling shall be stopped during and after heavy rainfall, and not continued until the soil is again non-plastic in consistency.
3. **Depths**  
Topsoil depths and finished levels are to be as indicated on the Earthworks Layout and Sections drawings.
4. **Ground Modelling**  
(Refer to Appendix B; Typical Section Through Ground Modelling). There shall be no ponding hollows within ground modelling.
5. **Gradients**  
Finished gradients are to be smooth, flowing, free of minor hollows and high spots and marry in neatly with paving, kerbs, edgings, manhole covers and existing levels. Refer to Earthworks Layout and Sections drawings for landform levels and profiles.

## 705 Handling topsoil

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1. **Standard:** In accordance with BS 3882.
2. **Aggressive weeds:** Give notice and obtain instructions before moving topsoil.
3. **Plant:** Select and use plant to minimize disturbance, trafficking and compaction.
4. **Contamination:** Do not mix topsoil with:
  - 4.1. Subsoil, stone, hardcore, rubbish or material from demolition work.
  - 4.2. Other grades of topsoil.
5. **Multiple handling:** Keep to a minimum. Use or stockpile topsoil immediately after stripping.
6. **Wet conditions:** Handle topsoil in the driest condition possible. Do not handle during or after heavy rainfall, or when the moisture content is greater than the plastic limit.

## 706 Topsoil and subsoil depths

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1. Minimum subsoil depths are to be as follows:
  - 1.1. in shrub bed areas 300mm
  - 1.2. in native hedgerow areas 600mm
  - 1.3. in species rich / wildflower grassland areas 300mm
2. Minimum topsoil depths are to be as follows:
  - 2.1. in tree pits 300mm
  - 2.2. in shrub bed areas 300mm
  - 2.3. in native hedgerow areas 300mm

## 708 Tree pits

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1. The Main Contractor shall provide short stakes to mark the exact positions of tree pits for acceptance by the Contract Administrator/Landscape Contractor prior to pit excavation and retain in the same position after topsoiling.
2. Refer to tree pit dimensions stated in the key of drawing: BCA 2345-23-02
3. Tree pits are to be:
  - 3.1. 1500 x 1500 x 900 overall depth; (18-20cm stem girth)
4. Depths: All tree pits to have 300mm depth of topsoil
  - 4.1. 750mm depth: to have 300mm depth topsoil and 450mm depth sandy subsoil or quarried sand.
  - 4.2. 900mm depth: to have 300mm depth topsoil and 450mm depth sandy subsoil or quarried sand and 150mm depth 10-20mm gravel.
  - 4.3. 1000mm depth: to have 300mm depth topsoil and 550mm depth sandy subsoil or quarried sand and 150mm depth 10-20mm gravel.
5. Drainage: Bottom of tree pits is to be broken up to a depth of 300mm to ensure free drainage. Additional depth of 10-20mm gravel or positive connection to drainage system may be required dependent on permeability of ground.

## 715 Loose tipping of topsoil

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1. **Standard:** In accordance with BS 3882.
2. **General:** Do not firm, consolidate or compact topsoil when laying. Tip and grade to approximate levels in one operation with minimum of trafficking by plant.

## 720 Finished levels of topsoil after settlement

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1. In relation to adjoining paving, kerbs or hard surfaces: 25 mm above
2. In relation to dpc of adjoining buildings: Not less than 150 mm below.
3. In relation to adjacent grass areas: 25 mm above
4. **Seeded areas:** Extend cultivation into existing adjacent grassed areas sufficient to ensure full marrying in of levels.
5. **Sportsfields:** To even levels and within the following permitted deviations:
  - 5.1. From levels or gradients shown on drawings:  $\pm 75$  mm.
  - 5.2. From line between boning rods 30 m apart:  $\pm 25$  mm.
6. Within root spread of existing trees and shrubs to be retained: Do not dig or cultivate.
7. Adjoining soil areas: Marry in neatly.
8. Thickness of turf or mulch: Included.

## 721 Inspection covers

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1. Inspection covers to be inclined to marry with adjacent earthworks profiles and levels.
2. The minimum topsoil depth to be achieved over concrete manhole slabs (where constructed) shall be 300mm depth in shrub areas and 150mm depth in grass areas. This should be achieved by raising covers on brickwork (refer to typical section through ground modelling).
3. Inspection covers should be located in either shrub or grass areas a minimum of 750mm from the edge of either finish.
4. If the covers are square or rectangular they should be positioned so they are parallel to the adjacent edge (grass edge, kerb edge, footpath edge, building line, etc.). If distant from edges covers shall be parallel to the contours.

## Completion

### 900 Completion of topsoiling

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1. Contamination  
Any areas of topsoiling that are contaminated with subsoil, rubbish, bricks, concrete, tarmac and other deleterious material shall be removed by the Main Contractor in the course of carrying out the earthworks.
2. The Main Contractor shall be required to carry out stone picking to all topsoiling to ensure it is free from all stones greater than 50mm.
3. Compaction  
Topsoiled areas shall be in an uncompacted and uncontaminated state prior to setting out of shrub and grass areas.

### 911 Handover inspection

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1. At handover of the landscape earthworks the Main Contractor must confirm to the Landscape Contractor/Contract Administrator that the landscape earthworks have been prepared and carried out in accordance with the earthworks drawings and specification.
2. The Landscape Contractor shall inspect and satisfy himself that landscape earthworks have been properly prepared prior to commencement of soft landscape operations.
3. Topsoiled areas shall be in an uncompacted and uncontaminated state prior to setting out of shrub and grass areas.

Ω End of Section



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