

Specification for Base Landscape Works

Brent Riverside Park, Brent Cross Cricklewood

1065-03-SP-07

Issued for RMA

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1.0 GENERAL ITEMS

1.1 Project Details

Project Name & Location:

Brent Riverside Park
 Brent Cross Shopping Centre,
 Hendon,
 London,
 NW4 3FP

Client:

Hammersons
 Standard Life Investments

Landscape Consultant:

Macgregor Smith Ltd
 Christopher House
 11-12 High Street
 Bath BA1 5AQ
 01225 464690

Scope of Works:

The scope of works covered by this specification includes the operations indicated below. The Ground Works Contractor should defer to the Main Contractor for confirmation of responsibility for any earthworks operations as described by this document.

Although it is envisaged that the works described in this document will largely be the responsibility of the Ground Works Contractor, the Main Contractor has an overall responsibility for the Construction Works and should therefore make himself familiar with this Specification.

A number of the operations described have a direct effect on elements of the Soft Landscape Works carried out by the Landscape Contractor and it is the Main Contractor's responsibility to ensure that there is full co-ordination between Soft Landscape and Base Landscape Works.

Operations:		Assumed Responsibility
Soil Testing	✓	Main Contractor
Protection of existing trees	✓	Main Contractor/ Ground Works Contractor
Clearance of existing vegetation	✓	Main Contractor/ Ground Works Contractor
Stripping of existing site soils	✓	Main Contractor/ Ground Works Contractor
Topsoil and subsoil storage	✓	Main Contractor/ Ground Works Contractor
Preparation of subsoil profiles and subsoil spreading	✓	Ground Works Contractor
Topsoil spreading	✓	Ground Works Contractor



Drawings:

This Specification should be read in conjunction with the latest revisions of all other relevant drawings. Refer to Drawing & Document Issue Sheet '1065 – Phase 1BN RMA Issue sheet ' for further information.

Documents:

This Specification should be read in conjunction with the Soft Landscape Specification '1065-03-SP-08'. Where schedules and drawings conflict, the **drawings** will take precedence.

Construction (Design and Management) Regulations:

The Main Contractor will ensure compliance with the Construction (Design and Management) Regulations 2015 (CDM) and is required to act as Principal Contractor for the Works. For the purposes of the CDM Regulations, the Planning Supervisor shall be the person, firm or company defined in the contract documents.

Intended Programme:

Refer to Gardiner & Theobald and Alinea project manager's programme of works for 1BN Landscape.

Refer to Schofield Lothian and AECOM project manager's programme of works for 1AN Landscape.

Base landscape works should be co-ordinated with planting works to ensure that areas of spread topsoil are not left exposed to the elements for extended periods.

Submission of Samples & Test Results for Approval:

The following items will require the submission of samples and/or test results for approval by the Landscape Consultant:

- Topsoil – full analysis in accordance with Clause 3.5 of this Specification
- Subsoil - full analysis in accordance with Clause 3.5 of this Specification

Items and Operations requiring approval by the Landscape Consultant:

The Contractor will be required to ensure that the Landscape Consultant has the opportunity to approve the following items:

- Topsoil & subsoil stripping operations and storage
- Subsoil formation and preparation
- Topsoil spreading



1.2 Terminology

The following terms have been used within this document. Abbreviations are shown in brackets:

Main Contractor (MC): The Contractor responsible for the overall co-ordination and implementation of the Construction Works.

Ground Works Contractor (GC): The Contractor responsible for carrying out base landscape operations, as defined in Section 1.1.

Landscape Contractor (LCr): The Sub-contractor responsible for carrying out the soft landscape works.

Contractor: Used where clause refers to both the Main Contractor and Ground Works Contractor.

Employer's Agent (EA): Agent acting on behalf of the Client to ensure that the Construction Works meet the Employer's Requirements and to liaise between the Contractors and Clients Design Teams.

Employer: The Client as defined in Section 1.1: Project Details.

Base Landscape Works: Elements of work associated with topsoil and subsoil preparation.

Soft Landscape Works: Elements of work associated with planting and horticultural operations.

Hard Landscape Works: Elements of work associated with 'hard' elements within the external works such as paving, street furniture, etc.

Topsoil: Dark horizon of natural soil surface, generally cultivated, containing high proportion of plant roots.

Subsoil: Underlying soil, paler in colour (than topsoil) with recognisable structure. Previous topsoil may be considered suitable as subsoil where it meets the conditions set out under the Subsoil section of this specification.



2.0 SCOPE OF BASE LANDSCAPE WORKS

2.1 Description of Existing Site Soils

- 2.1.1 The site is currently predominantly a functioning car park for the existing Brent Cross Shopping Centre situated adjacent to the North Circular in between the A41 and M1 Interchange.

The proposed route of the realigned central section River Brent is principally over areas of hard standing used for over spill car parking associated with the Brent Cross Shopping Centre with only limited areas of existing soils to the perimeter of the area.

- 2.1.2 Its envisaged that very limited amounts of topsoil and subsoil will be won from site and reused within the soft landscaped areas of the proposed scheme. It is anticipated imported topsoil and subsoil will be needed to make up the required quantities.

Prior to commencement of any works on site, detailed testing and analysis of the existing site soils should be carried out to assess potential quantities available, and suitability for re-use as either a subsoil or topsoil material within the soft landscaped areas. Refer to section 3.0 for details of the requirements of this.

Further to soil testing and analysis, should the existing site soil prove to be unsuitable for re-use, all unsuitable site soils must be removed from site and appropriately disposed of, and all subsoil and topsoil for the landscaped areas will need to be imported. This will be entirely at the Main Contractor's expense, and therefore an allowance for this eventuality should be made in the Main Contractor's tender.



2.2 Soil Management

- 2.2.1 Given the scale of works, the Contractor should appoint a soil scientist for the duration of all base landscape works as detailed in Section 3.9. The soil scientist will be responsible for overseeing the soil protection, stockpiling, manufacturing/amelioration and placement of both existing re-used and imported soils.
- 2.2.2 All site clearance and soil stripping operations should be planned to occur in advance of contract mobilisation or occupation of site areas. Existing soils must be protected from vehicular damage, especially in wet weather, and therefore all areas where existing soil may potentially be stripped and re-used in soft landscaped areas should be protected by fencing, to prevent access and damage by machinery / plant etc, and allow investigation as required by a Soil Scientist, as detailed in Section 3.0 of this Specification. Soils compacted by site traffic will not be suitable for re-use.
- 2.2.3 The Contractor should note that all existing site topsoil and subsoil materials potentially have a value to the project, and the Contractor will be expected to make all reasonable efforts to recover suitable soils and protect stockpiled materials for re-use.
- 2.2.4 Where the Contractor fails to protect the soil resources of the site, they will be liable for arrangements and all costs for the disposal of the wasted materials and all costs for securing, testing and importing replacement materials.

2.3 General Requirements

- 2.3.1 All groundwork is to be carried out in accordance with British Standard BS4428:1969 A General Landscape Operations unless otherwise specified hereafter.

No soil is to be handled and spread during wet weather or when the soil is wet. All operations may be carried out by suitably approved machines or by hand. Any work around the base of existing trees or hedges, in confined spaces, or in areas which are impracticable to carry out by machine for any reason, shall be executed by hand.

2.3.2 Definitions

For the purposes of this specification the following definitions of soils are used :

Sub Soil	Underlying soil, paler in colour (than topsoil) with recognisable structure. Previous topsoil may be considered suitable as subsoil where it meets the conditions set out under the Subsoil section of this specification.
Top Soil	Dark horizon of natural soil surface, generally cultivated, containing high proportion of plant roots

2.3.3 Stabilised Materials

Lime or cement stabilised materials are not suited to soft landscape works and should be regarded as a potential contaminant in planted areas. Contractors must notify the Landscape Architect if such materials are intended or are used on this project.



2.4 Management of the Works

- 2.4.1 The Contractor will be required to ensure that whenever their operatives are on site, there is a responsible person in charge who is familiar with the terms of this Specification and is able to take instructions on their behalf.
- 2.4.2 The Contractor will be required to confine his access and activities to the areas identified on the Contract Drawings. Any damage to surfaces, services or features beyond the limit of these works will have to be made good at no additional expense to the Employer. Highways, site roadways and access points must be kept clean and clear.
- 2.4.3 The Contractor is required to allow for the removal from site of all surplus materials, spoil, and rubbish arising from his works. At the end of each and every working day the site must be left in a clean and tidy condition with all soil removed from hard surface areas.
- 2.4.4 The Contractor is required to allow for the disposal of water from all excavations and planting areas as necessary to facilitate these works.
- 2.4.5 The Main Contractor will be required to be responsible for liaison with the highway authorities or police and all traffic management measures required for all operations within or from public highways. The Groundworks Contractor should ensure that the Main Contractor is fully aware, in good time, of their requirements for any operations that will take place within, or from, public highways.
- 2.4.6 The Contractor will be required to ensure that he and his staff all pay due regard to the requirements of the Health and Safety at Work Act 1974 and all subsequent revisions and amendments. Under the CDM Regulations 2015, the Groundworks Contractor will be required to ensure he and his staff co-operate fully with the Principal Contractor.
- 2.4.7 The Contractor will be required to ensure that he and his staff comply with all relevant UK and European Legislation.



2.5 Injurious, Non-native Invasive or Harmful Weed and Pest Species

2.5.1 The following selected species are either Injurious Weeds, as defined by the Weeds Act 1959, Non-native Invasive plant or animal species as identified by the Wildlife and Countryside Act 1981 – Schedule 9 (updated in 2010,) or species considered harmful to the environment, not currently covered by legislation, which are considered to be of particular threat or likely occurrence on this site. For full Schedule 9 species list please refer to Appendix A.

Injurious Weeds as prescribed by the Weeds Act 1959 (must be controlled)	Selected Species covered by the Wildlife & Countryside Act 1981 (updated 2010) (illegal to spread in the wild)	Other Harmful Species
<p>Spear Thistle (Cirsium vulgare) Creeping or Field Thistle (Cirsium arvense) Curled Dock (Rumex crispus) Broad leaved Dock (Rumex obtusifolius) Ragwort (Senecio jacobaea)</p>	<p>Japanese knotweed* (Reynoutria japonica) Giant Hogweed*(Heracleum mantegazzianum Himalayan Balsam* Impatiens glandulifera Australian Swamp Stonecrop Crassula helmsii Parrot’s Feather* Myriophyllum Floating Pennywort* Hydrocotyle ranunculoides Creeping Water Primrose*</p> <p>Chinese Mitten Crab**</p>	<p>Mares-tails Invasive plant difficult to control Brown Tail Moths Caterpillars occur in large numbers and can cause skin irritation</p>

*These plant species are identified by the Environment Agency’s document ‘Managing Invasive non-native plants’ as being of particular concern in waterside areas. Revised 2010.

** As noted by LBB of particular concern to this stretch of the River Brent.



- 2.5.2 A survey of Invasive Weed Species listed in Schedule 9 has been carried out by Elcot Environmental - Survey of Schedule 9 Listed Invasive Weed Species Revision C - 7.11.14, for the Phase 1AN area, and a method statement has been provided for the removal of such species on site. However, it is the responsibility of the Contractor to note the presence, or sightings of any further occurrence of Schedule 9 and other legislated species, and bring it to the attention of the Landscape Consultant and agree a methodology for the removal of these weeds as appropriate.

Invasive species listed under Schedule 9 of the Wildlife and Countryside Act (1981, as amended) and / or the London Invasive Species Index (LISI) were recorded to be present on the Site in the invasive species report (Elcot Environmental 2014); species include false acacia - *Robinia pseudoacacia*, Japanese knotweed - *Fallopia japonica* and Giant Hogweed - *Heracleum Mantegazzianum*.

To control the spread of the weeds in the existing locations the area should be cleared in line with the method statements approved under condition 27.8 and in accordance with the Environmental Protection Act 1990; Japanese Knotweed is classed as 'controlled waste' and as such must be disposed of safely at a licensed landfill site according to the Environmental Protection Act (Duty of Care) Regulations 1991.

To prevent the spread of invasive plants, once the Site is operational, regular checks should be made to record the extent of any invasive species and to remove seedlings / young plants of invasive species such as false acacia and to check for the presence of Japanese knotweed, which requires specific management and removal processes.

- 2.5.3 It is the Contractor's responsibility to familiarise themselves with updates to legislation covering potential injurious, or non-native invasive plant and animal species, as this can be subject to change at any time.



3.0 SOIL TESTING

3.1 Generally

The proposed route of the realigned central section River Brent is principally over areas of hard standing used for over spill car parking associated with the Brent Cross Shopping Centre. With only limited areas of existing soils to the perimeter of the area.

It is envisaged that very limited amounts of topsoil and subsoil will be won from site and reused within the soft landscaped areas of the proposed scheme. It is anticipated imported topsoil and subsoil will be needed to make up the required quantities.

3.2 Calculation of quantities of topsoil and subsoil required

3.2.1 The Contractor shall calculate the quantities of topsoil and subsoil required for the soft landscaped areas, to achieve the depths as detailed in clause 6.3.1.

3.2.2 The existing and proposed finished levels should be taken into account when making these calculations, to assess whether reduce level excavations are required, or levels need to be made up to achieve the finished levels :

- In some areas, the existing site soils may be left in-situ, but require some additional subsoil spreading to make up the required levels prior to topsoil spreading
- In other areas, reduce level excavations of the existing site soils may be necessary to achieve the correct level, prior to topsoiling
- In proposed wildflower areas, the existing topsoil layer may need to be removed or the soil profile inverted to ensure a suitably low fertility soil condition

3.3 Depth of Strip

3.3.1 It is the Contractor's responsibility (via the appointed Soil Scientist) to dig trial holes across the potential areas identified for soil re-use, to establish the depth of the existing site soils which may be suitable for re-use.

3.3.2 All inorganic materials, hard-standing etc is to be first excavated to a sufficient depth and removed from site, so that the original soil layer may be reached.

3.3.3 Once the depth of potentially suitable material for stripping and re-use is established, testing and analysis by a Soil Scientist is required to assess its suitability for re-use.

3.3.4 Following the results of the soil analysis and production of a soil strategy for the site, all excavated material in excess of the required quantities to implement the works shall be disposed of away from the site by the Contractor at no additional cost.



3.4 Testing and Analysis

Prior to the stripping of any site topsoil and / or subsoil, detailed testing and analysis should be carried out to assess its suitability for re-use within the soft landscaped areas.

All reports and surveys prepared by the soil scientist will be made freely available to the Landscape Consultant and Client Team.

3.5 Sampling

3.5.1 Samples of the topsoil and / or subsoil proposed for use for the landscape scheme are to be taken for analysis. Each sample shall be truly representative of the existing site subsoil / existing site topsoil / topsoil to be imported / subsoil to be imported. One composite sample shall be taken for every 250m³ of soil being considered.

Each composite sample shall be made up of 10 no. sub-samples taken from the full depth from evenly spaced locations across the site.

The sub-samples shall be mixed together and quartered down to form two 1kg composite samples.

Each composite sample shall be placed in a clean plastic bag and labelled with the supplier's name, date of sampling and sample location.

Of each pair of composite samples:

- one composite sample shall be sent to a testing laboratory from the list below (clause 3.7), with a request for each one to be analysed strictly in accordance with the testing schedule given below
- one composite sample shall be sent to the Landscape Consultant for cross reference with the analysis.



3.6 Soil Testing Schedule

Each composite sample shall be tested, prior to approval by the Landscape Consultant, in accordance with the topsoil and / or subsoil specifications set out in clauses 3.7 below.

The following parameters should be requested:

1. Visual examination to record: Munsell colour, structure, consistency, stone size and shape, presence of any deleterious materials
2. pH Value (RB427 Method)
3. Electrical Conductivity (1:2.5 soil/water extract)
4. Particle Size Analysis (clay, silt, 5 sands)
5. Permeability
6. Stone Content by % weight (>2mm, >20mm, >50mm)
7. Total Nitrogen (% -Dumas Method)
8. Extractable Phosphorus, Potassium & Magnesium (RB427 Method)
9. Organic Matter (% - RB427 Method)
10. Heavy Metals – As, Cd, Cr, Pb, Hg, Se, Cu, Ni, Zn, B
11. Total Cyanide & Total (mono) Phenols
12. Soluble Sulphate, Elemental Sulphur & Total Sulphide
13. Polycyclic Aromatic Hydrocarbons (specified US EPA 16)
14. Total Petroleum Hydrocarbons (C10-C40 by GC-FID)
15. Total Calcium Carbonate content (CaCO₃)



3.7 Soil Specifications

3.7.1 Subsoil Specification Ornamental Shrub Beds, Native Planting Areas and Amenity Grass Areas

All subsoil to be used for shrub beds, native planting areas and turfed areas shall comply in all respects to the requirements within the specification listed below. This specification applies both to the existing site subsoil which may be stripped and re-spread, or for imported subsoil.

3.7.1.1 Visual Examination

The soil shall have a defined granular, crumb or blocky structure and shall be reasonably free from non-soil material, brick or other building material and wastes, hydrocarbons, plant matter, roots of perennial weeds and any other foreign matter or material or substance that would render the subsoil unsuitable for use.

3.7.1.2 Physical and Chemical Parameters

Physical Parameters		
Clay (less than 0.002mm)	%	5 - 30
Silt (0.002 – 0.05mm)	%	5 - 45
Sand (0.05 – 2.00mm)	%	45 - 90
Max. Stone Content (2 – 50mm)	% by weight	50
Max. Stone Size in any dimension	Mm	50

Chemical Parameters		
pH value (1:2.5 soil : water)	Units	5.0 – 8.5
Electrical Conductivity (1:2.5 water)	µS/cm	<2000
Electrical Conductivity (1:2.5 CaSO4)	µS/cm	<2800
Organic Matter	%	<1.5



3.7.2 Subsoil Specification Tree Pits in Soft Landscaped Areas

The subsoil/sand that is to be used for tree pit planting in soft landscaped areas shall comply in all respects to the requirements listed below - this forms the specification for RH37 sand as specified within the tree pit detail. All subsoil within new tree pits shall be imported and tested in line with this clause.

3.7.2.1 Visual Examination

The soil shall be reasonably free from non-soil material, brick and other building materials and wastes, hydrocarbons, plant matter, roots of perennial weeds and any other foreign matter or material or substance that would render the subsoil unsuitable for use.

3.7.2.2 Physical and Chemical Parameters

Physical Parameters		
Clay and silt (less than 0.05mm)	%	0 - 20
Sand (0.05 – 2.00mm)	%	80 - 100
At least 45% of the total soil fraction shall fall within the medium to coarse sand range).		

Permeability	m/sec	$10^{-5} - 10^{-6}$
Max. Stone Content (2 – 50mm)	% by weight	35
Max. Stone Size in any dimension	mm	50

Chemical Parameters		
pH value (1:2.5 soil : water)	Units	5.5 – 8.2
Electrical Conductivity (1:2.5 water)	$\mu\text{S/cm}$	<1500
Electrical Conductivity (1:2.5 Ca SO ₄)	$\mu\text{S/cm}$	<2800
Organic Matter	%	<1.0



3.7.3 Topsoil Specification Tree Pits and Shrubs in Soft Landscape Areas

All topsoil to be used for tree pit planting and shrub beds in soft landscape areas shall be 100% peat free, and shall comply in all respects to the requirements listed below. This specification applies both to the existing site topsoil which may be stripped and re-spread, or for imported topsoil, if this becomes necessary.

3.7.3.1 Visual Examination

The soil shall have a defined granular or crumb structure and shall be free from non-soil material, brick and other building materials and wastes, hydrocarbons, plant matter, roots of perennial weeds and any other foreign matter or material or substance that would render the topsoil unsuitable for use.

3.7.3.2 Physical and Chemical Parameters

Physical Parameters		
Clay (less than 0.002mm)	%	0 - 15
Silt (0.002 – 0.05mm)	%	0 - 25
Sand (0.05 – 2.00mm)	%	60 - 95
(At least 40% of the total soil fraction should fall within the medium to coarse sand range)		

Permeability	m/sec	10 ⁻⁵ -10 ⁻⁷
Max. Stone Content (2 – 50mm)	% by weight	20
Max. Stone Size in any dimension	Mm	50

Chemical Parameters		
pH value (1:2.5 soil/water)	Units	5.5 – 8.2
Electrical Conductivity (1:2.5 water)	µS/cm	<1500
Electrical Conductivity (1:2.5 CaSO ₄)	µS/cm	<2800
Organic Matter	%	4.0 – 8.0
Total Nitrogen	%	>0.2
Extractable Phosphorus	Mg/l	>26
Extractable Potassium	Mg/l	>300
Extractable Magnesium	Mg/l	>50



3.7.4 Topsoil Specification Native Transplants and Amenity Grass Areas

All topsoil to be used for native transplants, structure planting or amenity grass areas shall comply in all respects to the requirements listed below. This specification applies both to the existing site topsoil which may be stripped and re-spread, or for imported topsoil, if this becomes necessary.

3.7.4.1 Visual Examination

The soil shall have a defined granular or crumb structure and shall be free from non-soil material, brick and other building materials and wastes, hydrocarbons, plant matter, roots of perennial weeds and any other foreign matter or material or substance that would render the topsoil unsuitable for use.

3.7.4.2 Physical and Chemical Parameters

Physical Parameters		
Clay (less than 0.002mm)	%	5 - 30
Silt (0.002 – 0.05mm)	%	5 - 45
Sand (0.05 – 2.00mm)	%	45 - 80
Max. Stone Content (2 – 20mm)	% by weight	10 (grass areas)
Max. Stone Content (2 – 50mm)	% by weight	35 (transplants)
Max. Stone Size in any dimension	mm	20 (grass) 50 (transplants)

Chemical Parameters		
pH value (1:2.5 soil/water)	Units	5.0 – 8.2
Electrical Conductivity (1:2.5 water)	µS/cm	<1500
Electrical Conductivity (1:2.5 CaSO ₄)	µS/cm	<2800
Organic Matter	%	3.0–15.0
Total Nitrogen	%	>0.15
Extractable Phosphorus	Mg/l	>26
Extractable Potassium	Mg/l	>220
Extractable Magnesium	Mg/l	>50



3.7.5 Soil Specification Wildflower / species Rich Grassland

All soil to be used for wildflower / species rich grassland shall comply in all respects to the requirements listed below. This specification applies both to the existing site soil which may be stripped and re-spread, or for imported soil, if this becomes necessary.

3.7.5.1 Visual Examination

The soil shall have a defined granular or crumb structure and shall be free from non-soil material, brick and other building materials and wastes, hydrocarbons, plant matter, roots of perennial weeds and any other foreign matter or material or substance that would render the topsoil unsuitable for use.

3.7.5.2 Physical and Chemical Parameters

Physical Parameters		
Clay (less than 0.002mm)	%	5 - 27
Silt (0.002 – 0.05mm)	%	5 - 45
Sand (0.05 – 2.00mm)	%	45- 85
Max. Stone Content (2 – 20mm)	% by weight	25
Max. Stone Size in any dimension	mm	35

Chemical Parameters		
pH value (1:2.5 soil/water)	Units	5.0 – 6.5 (acid grassland)
pH value (1:2.5 soil/water)	Units	7.5 – 8.5 (calcareous grassland)
Electrical Conductivity (1:2.5 water)	µS/cm	<1500
Electrical Conductivity (1:2.5 CaSO ₄)	µS/cm	<2800
Organic Matter	%	<2.0
Extractable Phosphorus	Mg/l	<10
Extractable Potassium	Mg/l	<120



3.7.6 Soil Specification Marginal/Aquatic planting and Coir Rolls

All soil to be used for Aquatic planting to specialist consultant’s specifications and recommendations. Soils for use within the river channel shall be free from herbicides and fertilizers, unless otherwise specified by the specialist and approved by the landscape architect and any relevant authorities.

Refer to clause 3.10 for specialists appointment requirements.

3.8 Potential Contaminants

The topsoil or subsoil shall comply with the permissible levels set out below:

Potential contaminant		Permissible level Housing and Parks	Permissible level Retail/Commercial
Total Arsenic (As)	mg/kg	<20	<20
Total Cadmium (Cd)	mg/kg	<1 (pH6; <2 (pH7); <8 (pH8)	<30
Total Chromium (Cr)	mg/kg	<130	<200
Total Lead (Pb)	mg/kg	<450	<450
Total Mercury (Hg)	mg/kg	<8	<15
Total Selenium (Se)	mg/kg	<35	<260
Total Copper (Cu)	mg/kg	<135	<135
Total Nickel (Ni)	mg/kg	<50	<50
Total Zinc (Zn)	mg/kg	<200	<200
Water-Soluble Boron (B)	mg/kg	<3	<3
Total Cyanide	mg/kg	<20	<20
Total (mono) Phenols	mg/kg	<5	<5
Sulphate (soluble)	g/l	<1.2	<1.2
Sulphide (total)	mg/kg	<20	<20
Sulphur (elemental)	mg/kg	<500	<500
TPH (sum C6-C40)	mg/kg	<100	<100
PAHs (USEPA16)	mg/kg	<40	<40
Benzo-a-pyrene	mg/kg	<1.3	<1.3



3.9 Soil Scientist Selection

Soil analysis and production of the interpretive report must be undertaken by a Soil Scientist approved by the Landscape Architect, as detailed in the following schedule:

Approved Soil Testing Facilities		
Tim O’Hare Associates Soil and Landscape Consultancy Howbery Park Wallingford Oxfordshire OX10 8BA Tel : 01491 822653		

3.10 Interpretive Report

3.10.1 The results of analysis should be presented in an **interpretive report** to include a Certificate of Analysis, comments on the soil’s compliance with the relevant specification and its suitability for the proposed landscape scheme with respect to the parameters determined. A copy of this specification and the proposed planting list / drawings for the landscape scheme shall be provided when the samples are submitted for review by the soil scientist and for reference within the soil analysis report. The report should either confirm that the specified application rates for fertiliser and compost applications are satisfactory, or make recommendations where appropriate.

3.10.2 Any soil offered which is deficient in the nutrient levels described above, but which otherwise conforms to the specification, may be acceptable providing suitable adjustments are made with the addition of organic and inorganic fertilisers to the satisfaction of the Landscape Consultant and at no additional expense to the contract.

The Landscape Consultant retains the right to reject any or all subsoil which does not comply with the specification and may request the Contractor to use other sources of supply. If, in the opinion of the Landscape Consultant, the subsoil varies in quality over the duration of importation, he may request further assessment of soil quality. If in such subsequent tests the quality of subsoil is found to be below specification then the Contractor will be liable for all costs incurred in sampling and the removal and replacement of defective materials.



4.0 RETENTION AND CLEARANCE OF VEGETATION AND TREES

4.1 Retention of Existing Trees, Vegetation and Site Features

4.1.1 Generally

This section sets out the requirements for the protection of all features on site which are to be retained, and in particular the protection of existing trees which are to be retained within the proposed development. All protective measures should be installed prior to any other works commencing on site, or any machinery / temporary buildings etc being positioned on site.

The BRP will be subject to site enabling/clearance works and significant engineering works which will be carried out prior to any soiling/amelioration work. Refer to Schofield Lothian/AECOM & Gardiner and Theobold/Alinea project managers programme of works and all associated site enabling works drawings.

4.1.2 Protection Requirements

4.1.2.1 Protection of Existing Features

All existing features adjacent to the works or to be retained on site (including fencing, paving, drains, public and private services, surrounding landscape and other property) must be protected from damage throughout the course of the works.

The Main Contractor is required to allow for any protective measures required, within the price for the works. Should any damage occur to property, highways, services or other property, the Main Contractor will be required to notify the Employer's Agent and the Statutory Authority/owner concerned, and will be required to make good the damage at his own expense.

4.1.2.2 Protection of Existing Trees and Vegetation

4.1.2.3 Existing trees and vegetation identified on the contract drawings as to be retained must be protected from damage to both root zones and above ground trunks, branches or canopies, and comply with BS5837:2012 'Trees in Relation to Construction - Recommendations'.

4.1.2.4 **Immediately upon commencement of the works on site**, the Contractor will be required to ensure that protective fencing is erected around the perimeter of all trees and hedgerows to be retained, in accordance with the contract drawings, thus creating a Root Protection Area (RPA) within the protective fencing.

4.1.2.5 Barriers should consist of a scaffold framework comprising a vertical and horizontal framework, well braced to resist impacts, with vertical tubes spaced at a maximum interval of three metres. On to this, weldmesh panels should be securely fixed with wire or scaffold clamps. Weldmesh panels on rubber or concrete feet are not resistant to impact and should not be used. All-weather notices should be attached to barriers with works such as : 'Construction Exclusion Zone – Keep Out'. Protection measures erected for the project will be maintained in place until formal instruction is given for its removal.



4.1.2.6 Where soiling works are required within protected areas, all operations will be undertaken by hand and the vegetation protected from any damage. No works shall be allowed within the Root Protection Areas (RPA) without the express consent of the Landscape Consultant. If consented, any excavations, cultivations and grading beneath the canopy of existing trees shall be carried out by hand, using hand tools, taking extreme care to not damage or disturb any tree roots, trunk and/or branches. The depths of any cultivation shall be modified accordingly to avoid severing any tree roots.

4.1.2.7 Within the RPA, the Contractor must ensure that:

- No vehicles are allowed to enter or cross the protected area
- No stockpiling of materials, topsoil, subsoil, rubbish, debris, rocks or any other extraneous matter occurs
- No storage of fuel, chemicals, construction material, however temporary, occurs
- No excavation or increase in level takes place without the Landscape Consultant's express approval.

4.1.2.8 Contractors shall ensure work in progress and completed works are adequately protected from concurrent and subsequent works. Soils damaged by interference or conflict between trades, or third party contractors or statutory undertakers, may be rejected in their entirety and replacement materials required at no additional costs to the Employer.

Vandalism, damage or theft by the public, prior to Practical Completion, will be remedied at no additional cost to the Employer. Post Practical Completion, the Contractor will monitor such damage and advise the Employer of any occurrence at the earliest opportunity. The day-to-day responsibility for protection measures must be agreed between the Groundworks Contractor and the Main Contractor prior to the commencement of the works.

4.1.2.9 Failure to comply with the specified protection works may result in an enforcement action by the Local Authority.

4.1.2.10 Protective fencing will only be allowed to be removed on completion of the project, or at the express consent of the Landscape Consultant.



4.2 Removal of Existing Trees

This section relates to the removal of all existing trees on site.

4.2.1 British Standards

The Landscape Contractor shall familiarise himself and his operatives with the British Standards referred to in this specification.

Operations shall be executed in accordance with the recommendations of :

- BS 3998 : 'Recommendations for Tree Work'
- BS 5837 : 2005 'Trees in Relation to Construction'

and all current and relevant British Standards

4.2.2 Tree Removal and Surgery

All arboricultural work shall be carried out by a specialist/qualified tree surgeon and shall be in accordance with BS 3998 'Recommendations for Tree Work'. The Arboriculturalist shall provide recommendations and schedules for remedial tree work to make safe trees to be retained.

4.2.3 Stump Treatment

All tree stumps to be chemically treated to prevent re-growth. Tree stumps are not to be removed. Cut limbs to be left dry but cut in accordance with BS 3998.

4.2.4 Arisings

All arisings to be removed from site.

4.2.5 Damage

Any landscape areas out-with the site that are damaged by the Main Contractor will be made good at no additional cost to the contract.



4.3 Clearance of Existing Vegetation

Prior to any soil stripping operations, the existing site vegetation shall be stripped and removed either by:

- herbicide application (see clauses 4.3.1 below)

4.3.1 Herbicide Application prior to Subsoil Stripping

4.3.1.1 Where there is sufficient time for translocated chemicals to take effect, and weather conditions permit, **herbicide application** is to be adopted as the preferred method of removing the existing site vegetation.

Within the areas to be stripped, spray out all areas of weed growth and grass with appropriate herbicides. Allow sufficient time for translocated chemicals to take full effect and then mow or strim off dead aerial growth and remove from site.

4.3.1.2 The Use of Chemical Pesticides and Herbicides

The Landscape Contractor should consider in every instance whether the use of chemicals is strictly necessary before application, and assess the product against site conditions, target species and adjoining species or areas to ensure minimum risk to employees, other users of the site and the environment. The Contractor will be expected to use translocated chemicals in preference to contact products for the control of perennial weed growth.

The Contractor must use certified operators for all applications, take appropriate safety precautions and comply with the Control of Pesticides Regulations 1986, the conditions of approval for the chemical, and any relevant Code of Practice issued by DEFRA. The Contractor must keep full and accurate records of all herbicides used, the area in question, the amounts and the date of completion.

4.3.1.3 Unintentional spray overlap must be avoided. Spraying must stop whilst turning. The Contractor must mark the point where spraying has stopped for refilling or for breaks. Herbicide must never drift, fall or run-off onto open water or onto adjacent sites, gardens or ground not intended for treatment.

4.3.1.4 The Contractor must dispose of unused and unwanted containers, and chemicals, including unused dilute tank mixtures, in a safe way in accordance with the methods approved by the Control of Pesticides Regulations and relevant Codes of Practice. Disposal will be off site.



5.0 EXISTING SITE SOIL STRIPPING AND STORAGE

5.1 Generally

- 5.1.1 It is the intention that the existing site soil shall be stripped from the site, and re-used as topsoil and / or subsoil / in soil manufacture, for the ornamental shrub, native planting, grass and wildflower areas.
- 5.1.2 The Contractor should note that all the existing site soils potentially have a value to the project and the Contractor will be expected to make all reasonable efforts to recover suitable soils and protect stockpiled materials for re-use.
- 5.1.3 Existing site soil is to be stripped in quantities as required, from all available areas within the site boundary.
- 5.1.4 Where existing soils are excavated for re-use, they must be stripped, stored and spread in accordance with this Specification.
- 5.1.5 Where the Contractor fails to protect the soil resources of the site, they will be liable for arrangements and all costs for the disposal of the wasted materials and all costs for securing, testing and importing replacement materials.
- 5.1.6 Stripping and storage of the existing site topsoil and / or site subsoil should be carried out as necessary to achieve the required levels and depths of topsoil and subsoil for the ornamental shrub, native planting and turfed areas.
- 5.1.7 Soil stripping shall only be carried out when the soil is in a sufficiently dry condition, capable of being handled without significant damage. All stripping operations shall only be carried out when the soil is friable (non-plastic) in consistency.

All soil handling shall be stopped during and after rainfall, and not continued until the soil has dried out sufficiently.

- 5.1.8 Remove soil in successive linear strips. Vehicles used for stripping shall not track over areas of soil that are to be incorporated into the strip.

5.2 Removal of inorganic materials prior to soil stripping

- 5.2.1 Following the removal of all site vegetation (as detailed in Section 4 above), an assessment should be made as to whether any part of the existing ground is made up with inorganic materials, hard-standing etc. If this is the case, all such material is to be excavated to a sufficient depth that the original soil layer is reached.
- 5.2.2 All inorganic materials etc. are to be removed and disposed of off site, to allow promotion of a free draining growing medium. The Contractor is responsible for assessing the extent and depth of material to be broken out, and is to allow for this in his price.



5.3 Calculation of quantities of soil required

5.3.1 The Contractor shall calculate the quantities of soil required to be stripped for the soft landscaped areas (ornamental shrub, native planting and turfed areas). **Refer to section 6 of this specification for details of both the required depths of topsoil/subsoil, and the depths of reduce level excavations.**

- In some areas, the existing site soils may be left in-situ, but will require some additional subsoil spreading to make up the levels prior to topsoil spreading
- In other areas, reduce level excavations of the existing site soils may be necessary to achieve the correct levels, prior to topsoiling works

5.4 Depth of Strip

5.4.1 It is the Contractor's responsibility to dig trial holes across the site (via the appointed soil scientist), to establish how deep the existing site soil is which is suitable for re-use. As detailed in clause 5.2 above, all inorganic materials, hardstanding etc is to be first excavated to a sufficient depth, and removed from site, so that the original soil layer may be reached.

5.4.2 Once the depth of suitable material for stripping and re-use across the site is established, the quantity required should be stripped for storage and re-spreading. This is as detailed in clause 5.6 below.

5.4.3 All excavated material in excess of the required quantities to implement the works, shall be disposed of away from site by the Contractor at no additional cost.

5.5 Stockpile Location

5.5.1 Stripped soil shall be stored in an area of the site where it shall not interfere with other site operations so that it can be left undisturbed during the construction process.

5.5.2 The area that is to be used for storing the soil shall be cleared of vegetation and any waste arising from the development eg. building rubble and fill materials.

5.5.3 Any in-situ soil present at the storage location shall also be stripped prior to stockpiling. If necessary, provision shall be made to replace this soil after the soil storage period.



5.6 Topsoil Stripping and Storage

5.6.1 Where existing topsoil is available on the site, topsoil for re-use shall be stripped from the top humus bearing horizons of the soil and shall be stored at an agreed site in preparation for re-spreading in the areas to be landscaped. Topsoil availability for stripping and re-use is likely to be limited and it is anticipated that the majority of topsoil will need to be imported.

The Contractor shall inspect the topsoil prior to stripping. Prior to uplifting and topsoiling the Contractor shall give the Employer and Landscape Consultant 48 hours notice.

5.6.2 If the existing ground is made up with inorganic materials, hard-standing etc., all such material is to be excavated to a sufficient depth so that the original organic subsoil layer is reached. All inorganic materials, etc, are to be removed and disposed of off site, to promote a free draining growing medium. The Contractor is responsible for assessing the extent and depth of material to be broken out, and is to allow for this in his price.

5.6.3 All topsoil shall be stripped using the 'loose-tipping' method that involves the use of tracked excavator and dump trucks.

A tracked hydraulic excavator, fitted with a wide, flat edged ditching/grading bucket, shall be used to strip the topsoil and load it into a dump truck. A tracked dozer shall NOT be used to strip the topsoil, unless approved.

5.6.4 Topsoil stripping shall only be carried out when the soil is in a sufficiently dry condition, capable of being handled without significant damage.

5.6.5 Remove topsoil in successive linear strips without driving over disturbed ground.

5.6.6 Stored topsoil and subsoil to be kept separate at all times.

5.6.7 The dump truck, running along a pre-designated route, shall transport the topsoil to the designated stockpile location. The Contractor shall avoid any double handling of stripped topsoil prior to tipping in the temporary soil heaps.

5.6.8 The topsoil, having been transported to the storage area in a dump truck, shall be 'loose-tipped' in a line of heaps (maximum ten heaps wide) to form un-compacted stockpiles. These should be shaped to shed water and be :

- maximum height of 2.0 metres when un-compacted
- maximum width of 10.0 metres

5.6.9 On no account is the topsoil to be compacted in the heaps or trafficked over by machinery. All material to be placed from the core outwards in successive strips.

5.6.10 The edges of heaps shall be tidied and gently raked to shape the heaps, with a slightly convex surface. No machinery shall drive over any part of the spoil heap. The sides and top of storage bunds should be lightly consolidated to improve rainwater run-off.



- 5.6.11 Ensure stockpiles are not located where water-logging may occur and so that stored soils do not need to be disturbed until materials are required for re-spreading.
- 5.6.12 Double handling of stored soils must be avoided if topsoil is to be in a suitable state for re-use.
- 5.6.13 Where construction activity will occur close to stored materials, ensure stockpiles are fenced off and other operations do not compact or contaminate the stored materials.

Take all necessary measures to ensure weed control by application of appropriate, non-residual herbicides, to subsoil heap to prevent noxious weeds seeding or otherwise causing a nuisance.

- 5.6.14 Ensure subsoil and topsoil, and varying grades of soil, are kept separate during both stripping and storage. Dump trucks shall not traverse across or reverse up the stockpile.



5.7 Subsoil Stripping and Storage

- 5.7.1 Stripping and storage of subsoil is to be carried out, as necessary to achieve proposed levels, and as a separate operation to topsoil stripping. Subsoil availability for stripping and re-use is likely to be limited and it is anticipated that the subsoil will need to be imported.
- 5.7.2 If the existing ground is made up with inorganic materials, hardstanding etc., all such material is to be excavated to a sufficient depth so that the original organic subsoil layer is reached. All inorganic materials, etc, are to be removed and disposed of off site, to promote a free draining growing medium. The Contractor is responsible for assessing the extent and depth of material to be broken out, and is to allow for this in his price.
- 5.7.3 The Contractor shall inspect the subsoil prior to stripping. Prior to uplifting and topsoiling the Contractor shall give the Employer and Landscape Consultant 48 hours notice.
- 5.7.4 All subsoil shall be stripped using the 'loose-tipping' method that involves the use of tracked excavator and dump trucks.

A tracked hydraulic excavator, fitted with a wide, flat edged ditching/grading bucket, shall be used to strip the soil and load it into a dump truck. A tracked dozer shall NOT be used to strip the soil, unless approved.

- 5.7.5 Subsoil stripping shall only be carried out when the soil is in a sufficiently dry condition, capable of being handled without significant damage.
- 5.7.6 Remove subsoil in successive linear strips without driving over disturbed ground.
- 5.7.7 The Contractor shall avoid any double handling of stripped subsoil prior to tipping in the temporary soil heaps.
- 5.7.8 Stored topsoil and sub-soil to be kept separate at all times.
- 5.7.9 The dump truck, running along a pre-designated route, shall transport the subsoil to the designated stockpile location. The Contractor shall avoid any double handling of stripped soil prior to tipping in the temporary soil heaps.

The subsoil, having been transported to the storage area in a dump truck, shall be 'loose-tipped' in a line of heaps (maximum ten heaps wide) to form un-compacted stockpiles. These should be shaped to shed water and be :

- maximum height of 2.0 metres when un-compacted
- maximum width of 10.0 metres

- 5.7.10 On no account is the subsoil to be compacted in the heaps or trafficked over by machinery. All material to be placed from the core outwards in successive strips.
- 5.7.11 The edges of heaps shall be tidied and gently raked to shape the heaps, with a slightly convex surface. No machinery shall drive over any part of the spoil heap. The sides and top of storage bunds should be lightly consolidated to improve rainwater run-off.



- 5.7.12 Ensure stockpiles are not located where water-logging may occur and so that stored soils do not need to be disturbed until materials are required for re-spreading.
- 5.7.13 Double handling of stored soils must be avoided if topsoil is to be in a suitable state for re-use. On no account is the subsoil to become compacted in the heaps.

Where construction activity will occur close to stored materials, ensure stockpiles are fenced off and other operations do not compact or contaminate the stored materials.

Take all necessary measures to ensure weed control by application of appropriate, non-residual herbicides, to subsoil heap to prevent noxious weeds seeding or otherwise causing a nuisance.

- 5.7.14 Ensure subsoil and topsoil, and varying grades of soil, are kept separate during both stripping and storage. Dump trucks shall not traverse across or reverse up the stockpile.

5.8 Soil Protection

- 5.8.1 To protect topsoil and subsoil heaps from wet weather once the final height is achieved, the tracked excavator shall re-grade the sides and top of the stockpiles and firm the surface by tracking across it to form a smooth gradient, to seal in the dry soil, and to reduce rainfall infiltration over the winter period.
- 5.8.2 Once the soil stockpiles have been completed, the area shall be cordoned off with Herras fencing (or similar and approved) to prevent any disturbance or contamination by other construction activities.

5.9 Herbicide Treatment

At least three weeks before re-spreading the soil, any existing vegetation on the surface of the soil stockpiles shall be sprayed off using an appropriate non-residual, contact herbicide (eg. Glyphosate). A BASIS qualified contractor shall be appointed to carry out all herbicide treatments. Attention to the requirements under current C.O.S.H.H. and any other relevant Health and Safety regulations shall be adhered to.



6.0 SITE PREPARATION AND SOIL SPREADING

6.1 General Requirements

6.1.1 Scope

This section deals with base landscape operations and covers the following:

- Site Preparation
- Preparation of subsoil profiles
- Subsoil spreading
- Topsoil spreading

6.1.2 General

All groundwork is to be carried out in accordance with British Standard BS4428:1989 code of Practice for General Landscape Operations (excluding hard surfaces) unless otherwise specified hereafter.

No soil is to be handled and spread during wet weather or when the soil is wet. All operations may be carried out by suitably approved machines or by hand. Any work around the base of existing trees or hedges or in confined spaces or areas which are impractical to carry out by machine for any reason, shall be executed by hand.

6.2 Site Preparation – Clearance of areas to be planted

All planting areas shall be cleared of weeds or extraneous materials ready for cultivation. Weeds should be treated with suitable translocated herbicide allowing sufficient time to elapse to kill roots. Debris and weeds collected should be removed from site - no burning shall be permitted.

Refer to site enabling works for further information.



6.3 Preparation of Subsoil Profiles

6.3.1 Subsoil Depths

The following requirements are geared towards achieving a viable rooting depth for trees and shrubs within all planting areas.

Within this, the **subsoil horizon** is intended to be in a suitable condition for root growth, i.e. free of contamination, compaction and water logging. Subsoil profiles must be prepared as specified to an appropriate level to accommodate the following topsoil depths.

Type of Planting	Topsoil Depth	Subsoil Depth	Depth of deep ripping of subsoil (if in-situ soil)
Structure Planting	300mm	700mm	700mm
Tree Planting	Refer to Section 3.7 of the Soft Landscape Specification '1065-03-SP-08'		
Ornamental Shrub Planting Only	300mm	550mm	550mm
Bio-swale – aquatic planting only	none	450mm	450mm
Bio-swale – marginal aquatic planting	300mm	none	-
Grass Areas	150mm	850mm	850mm

6.3.2 Subsoil Material

Subsoil material can be re-used from previous earthworks operations on site / imported as required (Excluding use within tree pits and planting over structure which shall be fully imported soils), and shall be excavated material which is composed of natural site subsoils / manufactured subsoil, and shall comply with the specification set out in Section 3.5 of this Specification.

Subsoils must be free from:

- Logs, stumps or other un-decomposed vegetative material.
- Materials in a frozen condition.
- Materials susceptible to spontaneous combustion.
- Clay of liquid limit exceeding 90 and/or plasticity index exceeding 65.
- Refuse and rubbish, including paper, plastics, rubber, metal and all type of containers.
- Concrete, brick, steel, masonry rubble or other deleterious material.
- Toxic substances and compounds that would inhibit healthy plant life.
- Any material not capable of being satisfactorily compacted.

Any such material shall be removed from site to the Contractors own tip.

Clay soils may be used when in a dry state, but extreme care is necessary to ensure the resulting subsoil profiles are not compacted, puddled or smeared.

All excavated material in excess of required quantities to implement the works, shall be disposed of away from site by the Contractor.



6.4 Subsoil Spreading and Grading

- 6.4.1 Where subsoil is used to form mounds and make up levels, the material selected shall be tested by the appointed soil scientist, and approved by the Landscape Consultant prior to spreading. Approved subsoil shall be spread and lightly consolidated in layers not exceeding 250mm finished thickness, to achieve a ground surface with smoothly flowing contours of true and even grades, free from localised depressions, high spots and all abrupt angles at changes of level. Approved topsoil is to be spread over the prepared subsoil in layers not exceeding 150mm, and firmed before the next layer is spread. Finished topsoil levels shall be 25mm above hard landscape edges, manholes or required levels to allow for settlement.
- 6.4.2 A minimum of 500mm wide level strip is to be established between any embankment or slope and any road, kerb, paved area, fence line or site boundary. Minor adjustments shall be made as necessary to bring planted areas into running level between paths, kerbs and adjoining paved and grass areas. No bank or slope to be steeper than 1:3. The ground surface of topsoiled areas shall be left with smoothly flowing contours of true and even grades free from localised depressions, high spots and all abrupt angles at changes of level.
- 6.4.3 All stones and other debris or extraneous material exceeding 100mm in any dimension shall be removed from all sub-soil profiles prior to topsoiling and disposed away from site.
- 6.4.4 Placed subsoil not to be trafficked by machinery at any time. Wheeltracks and other compaction by any means shall be forked over.

6.4.5 Bioswales – with aquatic planting only

Where the planting within bioswales is to be aquatic planting only, no topsoil is required, and only subsoil shall be spread. Following subsoil spreading in bioswales, all other construction activity must be excluded to prevent soils being damaged by compaction or contamination (both before and after planting / seeding).

Lightly compacted soils resulting from foot traffic, or similar, should be loosened using a rotovator, allowing for cultivation to full depth. Compaction of soils with heavy site traffic or other damage or contamination must be remedied to the standards of this Specification. Any subsoil that becomes contaminated during the works by diesel, oil, or by any other materials deleterious to plant growth shall be removed from site.



6.5 Ripping of Existing In-situ Subsoils

Before the application of topsoil, prepare existing in-situ subsoil areas by excavating or ripping compacted profiles to full depth as set out in the table in clause 6.3.

Open up subsoil by winged tines or excavator to ensure no lumps over 250mm diameter remain within the profile and all extraneous debris is removed. Areas within small island beds in hard landscape, car parks or roadways will require careful excavation to avoid disturbance to kerbs or hard landscape. Such small areas may require a narrow bucket or single tooth on an excavator to achieve the required loosening up.

All stones, deleterious material and material unsuitable for plant growth must be removed. Overly compacted, puddled, or waterlogged subsoils must be removed from planting areas and disposed out of the landscape areas. Allow for the removal of water from all excavations that occur prior or during soiling works.

Grade the subsoil formation to create smooth flowing gradients allowing for the addition of the full depth of topsoil as set out above.

The subsoil formation level shall be approved by the Landscape Consultant before topsoiling commences.

Care shall be taken during this operation to prevent damage to underlying services, and depths of ripping shall be locally reduced as necessary. It is the Contractor's responsibility to ensure he is aware of the exact location of all service runs, and to ensure no damage is done to any services.



6.6 Topsoil Spreading

6.6.1 Soil Spreading

Topsoil is to be spread over the prepared subsoil in layers not exceeding 150mm, and firmed before the next layer is spread. Finished topsoil levels shall be 25mm above hard landscape edges, manholes or required levels to allow for settlement.

Settlement below the edges of hard landscape, manholes or finished levels during the Defects Liability Period will be made good at no additional expense.

Since topsoiling proceeds all consolidation, wheeltracks and other compaction by any means shall be forked over.

A 500mm wide level area of land shall be established between the tops and bottoms of all banks and mounds and adjacent to paths, paved surfaces, walls or buildings. This shall form a shoulder at the top of a bank and be slightly dished at the foot of the bank to prevent soil washing onto adjacent hard surfaces and water drainage against buildings. The ground surface of topsoiled areas shall be left with smoothly flowing contours of true and even grades free from localised depressions, high spots and all abrupt angles at changes of level.

6.6.2 Bioswales – with marginal aquatic planting

Where the planting within bioswales is to include marginal aquatic planting, spreading of 300mm depth topsoil is required. Following topsoil spreading in bioswales, all other construction activity must be excluded to prevent soils being damaged by compaction or contamination (both before and after planting / seeding).

Lightly compacted soils resulting from foot traffic, or similar, should be loosened using a rotovator, allowing for cultivation to full depth. Compaction of soils with heavy site traffic or other damage or contamination must be remedied to the standards of this Specification. Any subsoil that becomes contaminated during the works by diesel, oil, or by any other materials deleterious to plant growth shall be removed from site.

6.6.3 Protection, Compaction and Contaminated Soil

After topsoil spreading, all other construction activity must be excluded from topsoiled areas to prevent soils being damaged by compaction or contamination (both before and after planting/seeding).

Lightly compacted soils resulting from foot traffic or similar may be loosened using a rotovator, allowing for cultivation to full depth. Compaction of soils with heavy site traffic or other damage or contamination must be remedied to the standards of this specification. Any subsoil or topsoil that becomes contaminated during the works by diesel, oil or by any other materials deleterious to plant growth shall be removed from site.

Prevent all weed growth on fallow areas awaiting suitable weather or season for planting /seeding, by cultivation or other approved means.



Appendix A:

The Wildlife and Countryside Act 1981 (Variation of Schedule 9) (England and Wales) Order 2010

Section 14(1) of the WCA makes it illegal to release or allow to escape into the wild any animal which is not ordinarily resident in Great Britain and is not a regular visitor to Great Britain in a wild state, or is listed in Schedule 9 to the Act. It is also illegal to plant or otherwise cause to grow in the wild any plant listed in Schedule 9 to the Act.

The Schedule 9 list of animal and plant species has been amended by the Wildlife and Countryside Act 1981 (Variation of Schedule 9)(England and Wales) Order 2010. Offences under section 14 carry a maximum penalty of a £5,000 fine and/or 6 months imprisonment on summary conviction (i.e. at Magistrates' Court) and an unlimited fine (i.e. whatever the court feels to be commensurate with the offence) and/or 2 years imprisonment on indictment (i.e. at Crown Court

SCHEDULE 9 ANIMALS AND PLANTS TO WHICH SECTION 14 APPLIES

PART I ANIMALS WHICH ARE ESTABLISHED IN THE WILD

Common name	Scientific name
Bass, Large-mouthed Black	Micropterus salmoides
Bass, Rock	Ambloplites rupestris
Bitterling	Rhodeus sericeus
Budgerigar	Melopsittacus undulatus
Capercaillie	Tetrao urogallus
Coypu	Myocastor coypus
Crab, Chinese Mitten	Eriocheir sinensis
Crayfish, Noble	Astacus astacus
Crayfish, Red Swamp	Procambarus clarkia
Crayfish, Spiny cheek	Orconectes limosus
Crayfish, Signal	Pacifastacus leniusculus
Crayfish, Turkish	Astacus leptodactylus
Deer, Muntjac	Muntiacus reevesi



Deer, Sika	Cervus nippon
Deer, any hybrid one of whose parents or other lineal ancestor was a Sika Deer	Any hybrid of Cervus nippon
With respect to the Outer Hebrides and the islands of Aaran, Islay, Jura and Rum - (a)Deer, Cervus(allspecies)	Cervus
(b)Deer, any hybrid one of whose parents or other lineal ancestor was a species of Cervus Deer	Any hybrid of the genus Cervus
Dormouse, Fat	Glis glis
Duck, Carolina Wood	Aix sponsa
Duck, Mandarin	Aix galericulata
Duck, Ruddy	Oxyura jamaicensis
Eagle, White-tailed	Haliaeetus albicilla
Flatworm, New Zealand	Artiposthia triangulata
Frog, Edible	Rana esculenta
Frog, European Tree (otherwise known as Common tree frog)	Hyla arborea
Frog, Marsh	Rana ridibunda
Gerbil, Mongolian	Meriones unguiculatus
Goose, Canada	Branta canadensis
Goose, Egyptian	Alopochen aegyptiacus
Heron, Night	Nycticorax nycticorax
Lizard, Common Wall	Podarcis muralis
Marmot, Prairie (otherwise known as Prairie dog)	Cynomys
Mink, American	Mustela vison



Newt, Alpine	<i>Triturus alpestris</i>
Newt, Italian Crested	<i>Triturus carnifex</i>
Owl, Barn	<i>Tyto alba</i>
Parakeet, Ring-necked	<i>Psittacula krameri</i>
Partridge, Chukar	<i>Alectoris chukar</i>
Partridge, Rock	<i>Alectoris graeca</i>
Pheasant, Golden	<i>Chrysolophus pictus</i>
Pheasant, Lady Amherst's	<i>Chrysolophus amherstiae</i>
Pheasant, Reeves'	<i>Syrnaticus reevesii</i>
Pheasant, Silver	<i>Lophura nycthemera</i>
Porcupine, Crested	<i>Hystrix cristata</i>
Porcupine, Himalayan	<i>Hystrix hodgsonii</i>
Pumpkinseed (otherwise known as Sun-fish or Pond-perch)	<i>Lepomis gibbosus</i>
Quail, Bobwhite	<i>Colinus virginianus</i>
Rat, Black	<i>Rattus rattus</i>
Snake, Aesculapian	<i>Elaphe longissima</i>
Squirrel, Grey	<i>Sciurus carolinensis</i>
Terrapin, European Pond	<i>Emys orbicularis</i>
Toad, African Clawed	<i>Xenopus laevis</i>
Toad, Midwife	<i>Alytes obstetricans</i>
Toad, Yellow-bellied	<i>Bombina variegata</i>
Wallaby, Red-necked	<i>Macropus rufogriseus</i>



Wels (otherwise known as European catfish)

Silurus glanis

Zander

Stizostedion lucioperca

PART II PLANTS

Common name

Scientific name

False-acacia

Robinia pseudoacacia

Fanwort

Cabomba caroliniana

Fern, Water

Azolla filiculoides

Fig, Hottentot

Carpobrotus edulis

Hogweed, Giant

Heracleum mantegazzianum

Hyacinth, water

Eichhornia crassipes

Kelp, Giant

Macrocystis angustifolia

Kelp, Giant

Macrocystis integrifolia

Kelp, Giant

Macrocystis laevis

Kelp, Giant

Macrocystis pyrifera

Kelp, Japanese

Laminaria japonica

Knotweed, Japanese

Polygonum cuspidatum

Leek, Few-flowered

Allium paradoxum

Lettuce, water

Pistia stratiotes

Parrot's-feather

Myriophyllum aquaticum

Pennywort, Floating

Hydrocotyle ranunculoides

Salvinia, Giant

Salvinia molesta

Seafingers, Green

Codium fragile tomentosoides



Seaweed, Californian Red	<i>Pilea californica</i>
Seaweed, Hooked Asparagus	<i>Asparagopsis armata</i>
Seaweed, Japanese	<i>Sargassum muticum</i>
Seaweeds, Laver (except native species)	<i>Porphyra</i> spp except - <i>p. amethystea</i> <i>p. leucosticta</i> <i>p. linearis</i> <i>p. miniata</i> <i>p. purpurea</i> <i>p. umbilicalis</i>
Shallon	<i>Gaultheria shallon</i>
Stonecrop, Australian swamp	<i>Crassula helmsii</i>
Wakame	<i>Undaria pinnatifida</i>
Waterweed, Curly	<i>Lagarosiphon major</i>

Annotations:

Note. The common name or names given in the first column of this Schedule are included by way of guidance only; in the event of any dispute or proceedings, the common name or names shall not be taken into account.



Other Relevant Legislation

Environmental Protection Act 1990 (EPA 1990), Part II

This Act has very limited provisions for non-native species, but is included here due to the potential classification of soil and other waste containing viable propagules of invasive non-native plant species as controlled waste. This has been applied to Japanese Knotweed *Fallopia japonica*, with the result that waste containing this species must be disposed of in accordance with the duty of care set out in section 34 of the Act. The Environment Agency have issued guidance which will be of use in complying with the duty of care

Waste Management Licensing Regulations 1994 as amended (the WMLR 1994)

Section 33 (1c) which makes it an offence to keep, treat or dispose of controlled waste in a manner likely to cause pollution of the environment or harm to human health.

Hazardous Waste Regulations 2005 (HWR2005)

