

Outline Specification for Soft and Base Landscape Works

Plots 53 and 54 Brent Cross Cricklewood

1065-10-SP-01

Phase 1AN RMA Submission

Revision	Description	Issued by	Checked by	Date
-	Issued for Phase 1AN RMA Submission	IG	GJ	07.11.2014

This report has been produced to support and describe the Phase 1A North Reserved Matters Application. It is not therefore submitted for formal approval and instead provides context to the application submission.

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For Maintenance Specification, refer to Landscape and Ecological Management Plan (LEMP) 1065-10-02



1.1 Protection Requirements

1.1.1 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. Work in progress, completed works and stored plant material must be adequately protected from concurrent and subsequent works.

1.2 Protection of Existing Trees and Vegetation

1.2.1 The Main Contractor will be responsible for the installation of protection measures around all vegetation to be retained, and will be responsible for the continued maintenance of those measures for the full duration of the works.

1.2.2 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 Macgregor Smith's Tree Retention and Removal Drawings (1065-06 series) and Hayden's Arboricultural Reports and Drawings.

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. Refer to BS5837 Figures 2 and 3 for details. 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.

1.2.3 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 not to damage or disturb any tree roots.

Within the RPA, the contractor must ensure that :

- No vehicles are allowed to enter or cross the protected area
- No stock piling of materials, topsoil, subsoil, rubbish or any other extraneous material 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
- no fires shall be lit beneath or in close proximity
- no concrete mixed within ten metres
- nothing attached to the trees
- all cranes / similar equipment kept away from the tree canopy

1.2.4 The contractor will be required to exercise extreme care when performing operations close to or beneath the canopy of existing mature trees in order to avoid, at all times, damage to roots, trunk and/or branches. The depths of any cultivation shall be modified accordingly to



avoid severing any tree roots. All works to be in accordance with BS5837:2012 'Trees in Relation to Design, Demolition and Construction-Recommendations'.

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

1.2 Noxious and Invasive or Harmful Weed and Pest Species

- 1.2.1 The following species are either Injurious Weeds, as defined by the Weeds Act 1959, or invasive or harmful species.

Injurious Weeds as defined by the Weeds Act (must be destroyed or controlled)	Species covered by the Wildlife & Countryside Act 1987 (illegal to spread in the wild)	Other Harmful Species
Spear Thistle (Cirsium vulgare) Creeping or Field Thistle (Cirsium arvense) Curled Dock (Rumex crispus) Broad leaved Dock (Rumex obtusifolius) Ragwort (Senecio jacobaea)	Japanese knotweed (Reynoutria japonica) Giant Hogweed (Heracleum mantegazzianum) Japanese Seaweed (Sargasseum multicum) Giant Kelp (Macrocystis pyrifera)	Mares-tails Invasive plant difficult to control Brown Tail Moths Caterpillars occur in large numbers and can cause skin irritation

- 1.2.2 The Contractor is to note the presence of any such species on site and bring it to the attention of the Landscape Consultant. Appropriate control measures should be agreed with the Employer's Agent and implemented at the earliest opportunity.

- 1.2.3 A survey of Schedule 9 Invasive Weed Species has been carried out by Elcot Environmental for the Phase 1AN area. All works in relation to Schedule 9 Invasive Weeds shall accord with the approved Method Statement for the Works.

1.3 Use of Pesticides and Herbicides

- 1.3.1 The 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.

- 1.3.2 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.

- 1.3.3 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.

- 1.3.4 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.



SECTION 2.0 QUALITY AND STANDARDS

2.1 This section relates to Quality Control and is applicable to all aspects of the Landscape Works.

2.1.1 British Standards

The Contractor shall familiarise himself and his operatives with the British Standards, as referred to in this Specification, and any subsequent revisions thereof.

2.1.2 Good Practice

Where and to the extent that materials, products and workmanship are not fully detailed or specified they are to be:

- Of a standard appropriate to the Works and suitable for the purposes stated in or reasonably to be inferred from the project documents,
- In accordance with good landscape/horticultural practice.

2.1.3 General Quality of Products/Materials

The Contractor must ensure that:

- Suppliers are familiar with relevant specification clauses and understand the constraints and requirements particular to the project.
- Products are new unless otherwise specified. Where appropriate, recycled materials should be considered, with approval from the Employer / Landscape Consultant.
- Certificates of compliance are obtained from manufacturers for products and materials specified to a British Standard when requested by the Landscape Consultant.
- The whole quantity of each product and material required to complete the work is of consistent kind, size, quality and overall appearance.
- If materials are prone to deterioration or have a limited shelf life, order in suitable quantities to reflect the programme and use in appropriate sequence.

2.1.4 Checking Compliance of Products/Materials

The Contractor must check all delivery tickets, labels, identification marks and, the goods themselves to ensure that all products comply with the project documents. Where different types of any product are specified, check to ensure that the correct type is being used in each location. In particular, check that :

- All stock has been adequately protected for loading and transit.
- The sources, types, qualities, finishes and colours are correct, and match any approved samples.



- The correct species, cultivars, pot sizes, plant height, girth or spread have been supplied for each consignment from the supplier.
- All materials should be clean, undamaged and otherwise in good condition.
- Where appropriate, protective covers should be intact with unbroken seals.

2.1.5 **Protection of Products/Materials/Stock**

Ensure adequate provision is made for the protection and storage of deliveries. In particular ensure that :

- Supplies are delivered in relation to programme. Materials which may deteriorate with storage must not be stock-piled on site.
- Adequate and appropriate provision is made for storage prior to deliveries arriving on site. ALL materials in storage are to be suitably protected from damage and extremes of weather.

2.1.6 **Suitability of Previous Work and Conditions**

Before starting each new type of section of work, ensure that:-

- Previous, related work is appropriately complete, in accordance with the project documents, to a suitable standard and in a suitable condition to receive the new work.
- All necessary preparatory work has been carried out, including provision for services and access.
- The environmental conditions are suitable, particularly that the weather and ground conditions are appropriate to the operation. Seasonal constraints are set out in clause 3.1 of this Specification.
- Remove all surplus materials, spoil, rubbish and litter from landscape areas as work progresses.
- Leave site in a clean and tidy condition, with soil/mulch swept off hard surfaces at the end of each and every working day.

2.1.7 **General Quality of Workmanship**

- Operatives must be appropriately skilled and experienced for the type and quality of work and familiar with the terms of the specification.
- Inspect products/materials/stock carefully before use and reject any which are defective.
- Use products/materials only in the method and for the purpose recommended by the manufacturer.



- Ensure appropriate quantities are utilized, provide adequate measures for mixing and spreading of all products or materials.
- Set out components or stock to ensure correct positioning and spacings are achieved.
- Protect finished work from subsequent operations and interference by others as project progresses.

2.1.8 **Samples/Approvals**

- Where approval of products or materials is specified submit samples or other evidence of suitability.
- Do not confirm orders or use materials until approval of samples has been obtained.
- Retain approved samples in good, clean condition on site for comparison with products and materials used in the Works. Remove when no longer required.
- General - Inspection by the Landscape Architect must not be taken as approval of materials, products or work unless the Inspecting Officer confirms in writing his express approval.

2.1.9 **Approvals**

Contractors must give 48 hours notice to the Landscape Consultant of the intention to begin the following operations:

- Cultivations
- Setting out tree pits and shrub beds
- Planting Trees and Transplants
- Shrub Planting
- Turfing
- Completion of Soft landscape works

2.2 **Testing**

The Landscape Consultant may require materials, goods, work or samples thereof to be tested to ensure that they comply with the standards specified, or with samples submitted. Where such tests indicate that the required standards have not been achieved, the costs of testing and of any subsequent re-testing are to be borne by the Contractor.

2.3 **Landscape Operations**

- 2.3.1 Unless otherwise specified or indicated in the tender drawings, the general landscaping operations shall be executed in accordance with the recommendations of BS4428 *General Landscape Operations (Excluding Hard Areas)*. Where practical, all current relevant British Standards should be adhered to.

Relevant Standards	
BS3551 Section 1.1	Classification scheme for fertilizers and soil conditioners
BS4428	Code of practice for general landscape operations
BS 8545	Trees: From Nursery to Independence in the Landscape This BS is to be followed where practical. Where it is impossible to source tree stock as specified in accordance with the BS, this will need to be reviewed accordingly.
BS3936 Part 1 1992	Specification for trees and shrubs.
BS3936 Part 2 1990	Specification for roses
BS3936 Part 4 2007	Specification for forest trees, poplars and willows
BS3936 Part 9 1998	Specification for bulbs, corms and tubers
BS3936 Part 10 1990	Specification for ground cover plants
BS4043 1989	Recommendations for transplanting rootballed trees
BS5837	Trees in relation to design, demolition and construction - recommendations

- 2.3.2 All operations herein described must be carried out with suitably approved machinery or by hand as the size of the areas or the accessibility dictates, and the need to work in such a manner must be reflected in the Landscape Contractor's rates.
- 2.3.3 The use of heavy machinery in excess of that required for the satisfactory construction of the work is prohibited. Where over-compaction results from the Contractor's failure to comply with this Clause, he shall, at his own expense, undertake whatever works the Employer's Agent may deem necessary to relieve the compaction and/or restructure the subsoil/topsoil.
- 2.3.4 The Employer's Agent may suspend any operation if he considers site conditions or weather conditions unsuitable to continue. Such a suspension cannot be considered a reason for any claim or loss by the Contractor.



SECTION 3.0 BASE LANDSCAPE OPERATIONS

3.1 Description of Existing Site Soils

- 3.1.1 The majority of the plot area is currently covered with rough grass, with some areas of former hardstanding
- 3.1.2 It is envisaged that the existing soils can be re-used as topsoil or subsoil as part of the proposals, however this would need to be confirmed by a soil resource survey. It may be necessary to import some subsoil and / or topsoil to make up the required quantities, should there be a shortfall of existing site soils. Due to the nature of the site, stockpiling opportunity for site won soils may be limited.

3.2 Soil Management

- 3.2.1 Prior to commencement of any works on site, a full survey and analysis of the site soils should be undertaken by a Soil Scientist, to assess the extent and quality of existing soils, and their suitability for re-use in the soft landscaped areas.
- 3.2.2 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 by a Soil Scientist, as detailed in Section 3.6 of this Specification. Soils compacted by site traffic will not be suitable for re-use.
- 3.2.3 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.
- 3.2.4 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.
- 3.2.5 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.

3.3 Calculation of quantities of topsoil and subsoil required

- 3.3.1 The quantities of topsoil and subsoil required for the soft landscaped areas should be calculated to achieve the following depths :

Type of Planting / Grass	Topsoil Depth	Subsoil Depth*	Depth of deep ripping of subsoil (if in-situ soil)
Structure Planting	300mm	700mm	700mm
Combined Tree and Shrub Planting	600mm	400mm	400mm
Ornamental Shrub Planting Only	450mm	550mm	550mm
Wildflower Meadows	-	600mm	600mm
Grass Areas	150mm	600mm	600mm
* Subject to Soil Resource Survey			

3.2 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

3.4 Depth of Strip

3.4.1 Trial holes should be excavated 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.

3.4.2 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.

3.4.3 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 as part of the Main Contract works.

3.5 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 ornamental shrub, transplant and turfed areas.

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. 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 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.

3.5.2 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, which will be detailed at the next stage.

The following parameters should be requested:

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

3.6 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 Tel : 01491 822653 Contact : Tim O'Hare	Voelcker Consultants Block A Long Island House 1-4 Warple Way London W3 0RG Tel : 0208 746 9550 Fax : 0208 746 9560	Soil and Land Consultants Ltd Howbery Park Wallingford Oxon OX10 8BA Tel : 01491 822614 Fax : 01491 822644

Interpretive Report

- 3.6.1 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.
- 3.6.2 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.

3.7 Soil Spreading

- 3.7.1 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.

3.7.2 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.

3.7.3 Soil is to be spread in layers not exceeding 150mm, and firmed before the next layer is spread, 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 in level. Finished topsoil levels shall be 25mm above hard landscape edges, manholes or required levels to allow for settlement. All stones and other debris or extraneous materials exceeding 100mm in any dimension shall be removed from all subsoil profiles prior to topsoiling and disposed away from site

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

Place soil must not be trafficked by machinery at any time. 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.



SECTION 4.0 PLANTING

4.1 General

4.1.1 Seasonal Constraints and Programme

Due to the seasonal nature of plant material, planting works must be undertaken during an appropriate time of year, as set out below, and Landscape Contractors must agree their programme with the Main Contractor at the time of tender or before appointment. In the absence of any notification on the limitations on the intended programme, it will be assumed the Landscape Contractor has the resources and made appropriate provisions for obtaining suitable plant stock to facilitate out-of-season planting to suit the overall project completion date. Refer to the Main Contractor for confirmation of the project completion date.

Type of Planting	Season
Bare Root Transplants	November - End of March
Root Balled Trees	November - End of March
Spring Ringed or Container Grown Trees	Year Round
Container Grown Shrubs / Ground Cover	Year Round
Grass Turf	October – End of April
Wildflower Seed	September/October and March/April

4.2 Plant Supply - Special Requirements

4.2.1 Quality Control

The Landscape Contractor will ensure that the suppliers can achieve the required specification for all plant stock as set out in this Specification and listed in the schedules.

The Landscape Consultant will carry out a minimum of one inspection of the plant supplies at each supplying nursery, prior to dispatch. This will include an inspection to select and tag trees, and to inspect the full quantity of shrubs / herbaceous perennials / hedging material. The Landscape Contractor will be expected to attend such inspections and should also undertake his own inspections to monitor the quality of the plant material.

4.2.2 Plant Delivery

No plants shall be delivered to site until areas are available for immediate planting or suitable storage arrangements have been put in hand.

The Landscape Contractor will be responsible for establishing the notice period and minimum call off values required by the Specified Suppliers for the delivery of plants, together with any restrictions of access to the site. The Specified Supplier's

price is normally for supply; the Landscape Contractor should include for any delivery costs from the nursery to the site, and mechanical aid or labour resources required to off load plant materials on site. The Contractor shall attend and provide sufficient trained personnel to receive the plant material and to unload it from the Specified Supplier's vehicles.

The Contractor shall check and inspect the plant material on arrival to ensure that they are in a moist condition and damage has not occurred in transit. In the event of damage or plants failing to meet the specification or not being fit for the purpose intended, the Contractor shall inform the Landscape Consultant and return the plants to the nursery stating in writing the reasons for rejection.

All plants which the Contractor accepts will, from this point onwards, be the responsibility of the Contractor, who shall guarantee them from damage or disease from whatever source until the end of the defects liability period.

4.2.3 Plant Storage

If plants are not to be planted on the day of delivery, a proper storage facility must be established on site before delivery. Storage areas must be secure and protected from other construction activity.

- **Bare rooted plants** supplied as bagged stock should be kept in bags unless storage is likely to exceed three days. In this case, they should be heeled in by placing the roots in a prepared trench, covering them with fine soil and well firming or watering in to prevent air pockets.
- **Trees** stored for more than 24 hours must be protected from damage and drying out, protect rootballs with damp hessian, straw or similar.
- **Container grown plant material** not required for 24 hours or more will be stored out of crates, upright and close together. Any plant material stored on site shall be protected from drying winds and watered.

4.3 Plant Supply - Stock Specification

4.3.1 Plant Supply - Trees

4.3.1.1 Trees Generally

All plants to be true to name and character and shall be supplied as bare rooted, rootballed, springringed or container grown. Unless otherwise stated, all feathered and standard sized trees shall be rootballed. They shall have been grown and handled according to good horticultural practice and according to all current UK Government and EC Regulations. The Grower shall be expected to carry out thorough and rigorous production methods to ensure that the trees are of the highest standard.

4.3.1.2 Dimensions for the Supply of Trees

All trees shall conform with the following dimensional requirements:



Designation	Circumference of stem at 1m from ground level	Minimum overall height from ground	Approximate maximum height from ground level	Clear stem height from ground level to lowest branch
Extra Heavy Standard	14-16cm	3.5	4.0	1.8 metres
Extra Heavy Standard	16-18cm	4.0	4.5	1.8 metres
Semi Mature	30-35cm	5.0	6.0	2.0 metres

Note: Coniferous and multi-stemmed trees shall be specified/scheduled by container size (litres) or height above ground level, as itemised within the tree schedules.

4.3.2 Plant Supply - Container Grown Shrubs, Herbaceous Perennials and Climbers

4.3.2.1 All container grown shrubs must be true to name and character and shall be supplied container grown. They shall have been grown and handled according to good horticultural practice and to all current UK and EC Regulations.

4.3.2.2 All plants shall be well developed and bushy and grown in a container for at least one full growing season prior to delivery.

The root systems shall thoroughly permeate the contents of the container with clear evidence of the proper establishment of a healthy fibrous root system within the full volume of the container. Plants showing signs of being pot-bound or waterlogged will not be acceptable.

Shrubs shall show a high degree of extension growth typical to the species or type and appropriate to the specified container size. The requirements given in the Plant Schedules constitute a guide to the required heights (measured from the surface of the compost) and number of breaks (in the lower third of the plants). Whilst it is recognised that these may vary according to the quality of the seasons, they will be regarded as a target for the measurement of quality, and reflect the requirement for a production regime of 'pinching' or 'trimming' to produce a bushy subject. In the event of the Grower not being able to attain this standard then he must advise the Landscape Consultant prior to delivery. The Grower shall ensure that plants are appropriately spaced to allow a full and uniform leaf coverage to develop to the crown, evenly radiated around the pot.

The compost shall hold sufficient reserves of nutrients to maintain the plant in a satisfactory condition for a reasonable period of time after leaving the Grower's nursery. The compost shall be free from any perennial weeds and shall have a reasonable moisture content. The compost shall not contain peat from UK Sites of Special Scientific Interest or the equivalent from other countries.



All plants shall on delivery be free from diseases and pests and materially undamaged. All plants shall be properly hardened off before delivery.

Each batch of shrubs shall be legibly labelled in the name of the project on a waterproof label with its generic and specific name.

4.3.3 Plant Supply - Bare Root Transplants

All bare rooted stock shall be true to species and type, with uniform shoot and root development, free from any pests or disease. Plants shall have vigorous leading shoots and appropriately furnished laterals according to species. Shrub species shall have minimum of four breaks at or near ground level. Root systems shall be well developed but compact, proportional to the size of plant, and with fine, fibrous rootlets. Stock shall be supplied to site root dipped, in a moist condition, and free of any sign of desiccation, contained in co-extruded polythene bags.

4.3.4 n/a

4.3.5 Plant Supply – Turf

Turf to be 'Tillers 'Arena' or equal and approved, supplied to BS3969. The Contractor is to arrange supply of turf to avoid stacking for more than three days. Do not stack more than one metre high and discard any turves which show signs of deterioration after storage.

4.4 Preparation and Planting Operations

4.4.1 Weather Conditions during Planting

Ensure weather and ground conditions are appropriate before any cultivation, planting or mulching.

- Planting will not take place during heavy rain or whilst soils are waterlogged.
- During periods of hot weather the Landscape Contractor shall take every precaution to maintain plants in peak condition before, during and after planting. Where necessary to maintain progress, planting may have to take place in the early morning or evening, and provision be made for protecting stock from excessive heat in the following days.
- No planting shall be carried out when the ground is frozen to a depth of 4mm or more, or when the air temperature is below 2°C.

4.4.2 Tree Planting

4.4.2.1 Tree Pit Dimensions

Tree pits should be excavated to the following dimensions, unless specified otherwise:



Tree Size	Girth	Dimensions of Tree Pit
Semi Mature	30-35cm	1700 x 1700mm square
Semi Mature	25-30cm	1550 x 1550mm square
Semi Mature	20-25cm	1400mm x 1400mm square
Extra Heavy Standard	14-20cm	1300mm x 1300mm square
Heavy standard and Standard trees	10-12cm and 12-14cm	1050mm x 1050mm square
Light and Half standards	-	600mm square x 450mm deep

4.4.2.2 Tree Pit Construction

During the excavation operation, topsoil should be stripped first and put aside for re-use; subsoil and unusable material should be carted away to tip.

The bottom of the tree pit should be broken up to a depth of 225mm to assist drainage and root penetration. Compacted glazed sides of pits resulting from the use of mechanical diggers in heavy soils should also be roughened.

During periods of intense and prolonged frost, the Contractor shall ensure that suitable measures shall be taken to protect the bottom / sides of the tree pits and piles of topsoil from becoming frozen.

4.4.2.3 Tree Pit Construction

Standards / Extra Heavy Standards (12-14cm - 18-20cm girth) located within soft landscape areas

Tree pits for individual standard and extra heavy standard trees shall be formed to the dimensions given in clause 4.4.2.1 above.

To relieve any compaction, the walls and base of the pit shall be loosened, with a fork for example, prior to back-filling. The base shall be broken up to a minimum depth of 250mm.

The lower half of the tree pit shall be backfilled with 300mm depth washed, medium /coarse sand laid over 300mm pea gravel (5-7mm diameter)

The upper half of the tree pit shall be backfilled with topsoil, ameliorated with compost and fertiliser as specified.

Soil arisings from the tree pit excavation shall either be re-used on site (with the Resident engineer's approval) or shall be removed from site.

4.4.2.4 Tree Pit Construction



Semi Mature Trees (20-25cm girth upwards) located within soft landscape areas

Tree pits for individual semi mature trees shall be formed to the dimensions given in clause 4.4.2.1 above.

To relieve any compaction, the walls and base of the pit shall be loosened, with a fork for example, prior to backfilling. The base shall be broken up to a minimum depth of 250mm.

The lower half of the tree pit (below the rootball) shall be backfilled with:

- 300mm depth washed, medium /coarse sand **RH37**, overlying:
- 300mm depth 5-7mm diameter pea gravel

The upper half of the tree pit (around the rootball) shall be backfilled with 450mm topsoil, ameliorated with compost and fertiliser as specified.

Soil arisings from the tree pit excavation shall either be re-used on site (with the resident engineer's approval) or shall be removed from site.

Watering / aeration tubes or similarly approved shall be fitted for all semi-mature trees.

4.4.3 Staking and Guying

- **All Semi Mature Trees / Advanced Nursery Stock in hard areas** shall be secured using a Platimat collar around the rootball, connected to an anchoring system – either Platipus driven anchor system or dead man anchors based on the tree's requirements. The Landscape Contractor is to evaluate the most appropriate anchoring system for each tree within the scheme, based on soil conditions, tree size, tree location and proximity of underground services. Following his evaluation, the Contractor shall submit his proposals for underground guying to the Landscape Consultant for approval.
- **Advanced Nursery Stock** trees shall be secured with two stakes set 500mm above ground level. Two lengths of webbing (one either side) shall pass around the tree and stake and attach to the opposing stake with two flat-headed galvanised nails. Rubber spacers shall be fitted.
- **Nursery stock** (selected standards and smaller) shall be secured to a single stake, set 500mm above ground level. The tree shall be tied on the leeward side of the stake using one tie and a rubber spacer.
- **Large transplants** shall be secured with a single 50mm diameter straight, pointed stake, a minimum of 1100mm long set 500mm above ground level. The tree shall be tied on the leeward side of the stake and tied using one tie and rubber spacer. Tree guards are to be supplied for all transplants and whips.
- **Feathered trees** shall be secured with one length of strapping passed around the tree and stake. The tree and stake are to be held apart by a rubber spacer.

Trees shall be secured with stakes as follows:

Tree	Stake diameter	Stake length
Advanced stock trees	75mm diameter	2 metres long
Nursery stock trees	75mm diameter	1.25 metres long
Whips and transplants (where rabbit guards are required)	25mm diameter	1.0 metre long

In general:

Stake length = length of stake above ground + depth of tree pit + 300mm

4.4.4 Irrigation and Aeration System

All trees are to be installed with an irrigation / aeration system, installed to manufacturer's recommendations. Inlets should be approximately 20mm proud of finished mulch level.

4.4.5 Root Barriers

Where trees are proposed near existing or proposed services, root barriers are to be installed to manufacturer's recommendations.

4.4.6 Bark Mulch

Melcourt 'Ornamental Grade' bark mulch or similar equal and approved to be spread to a depth of 50mm in all areas of shrub and hedge planting and in a 1200mm diameter circle around all trees planted in grass areas.

The Contractor shall notify the Landscape consultant of the mulch being used prior to spreading. The mulch shall be from an approved source and a representative sample of the mulch shall be supplied for approval prior to delivery to site. All deliveries shall conform to the sample.

