

murray & associates  
landscape architecture

**Appendix A**

**LANDSCAPE MANAGEMENT PLAN**  
**OUTLINE SPECIFICATIONS FOR LANDSCAPE WORKS**

*for*

**Stradbroom Rd SHD**

June 2022

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# LANDSCAPE MANAGEMENT PLAN

## 1. Introduction

The purpose of this Landscape Management Plan is to provide guidance and specifications for the maintenance requirements of the landscape elements of the proposed development and all associated spaces. This will cover all of the landscape typologies, both existing (hedgerows and mature trees) and proposed (trees, shrubs, hedging, grass, bulbs, SuDS features, etc.) on-site to ensure that all maintenance operations required for the efficient and effective management of the landscape are characterised and defined. The plan will provide a set of measurable performance standards that can be applied to evaluate landscape maintenance works carried out on the site.

## 2. Nature of Site

Landscape works are proposed to enhance the overall appearance of the new senior housing area and create an appropriate and high-quality series of open spaces. The soft landscape works include trees and shrub / perennial plantations of both native and ornamental varieties, as well as areas of grass. Hard landscape works include feature paving, permeable paving, and several Sustainable Drainage System (SuDS) measures, as well as landscape furniture.

## 3. Timeframe & Programming

Planting works will be carried out in the planting season following completion of construction and maintenance will follow thereafter, following the programme set out in the following document.

A detailed programme of works will be agreed with the Contractor prior to maintenance operations commencing, in each year.

## 4. Aims & Objectives

### 4.1 General

Fundamentally, the aim of landscape management is to ensure that all external areas are kept in good condition, as perceived and expected by the users. The Landscape Management Plan aims to provide a manual for the maintenance requirements of the road network and adjacent landscapes. It will define and specify all necessary operations for the efficient and effective management of the landscape in order to ensure that each area is appropriately and sustainably maintained.

### 4.2 Horticultural / Sylvicultural Objectives

Horticultural and sylvicultural aims relate to the appropriate management operations for all plants and trees. The specific horticultural objectives are as follows:

- All plants to be maintained so that they remain in good health;
- All plants to have a habit and form consistent with species type and aesthetic objectives;
- Specialist operations for particular types of plants where necessary to achieve the aesthetic or functional objectives, e.g. pruning, dead-heading of flowering plants, formative clipping, etc. are included in the plan;
- Areas surrounding plants are to be maintained in such a way that potential threats to plant viability are addressed, e.g. weed control (particularly invasive and noxious weeds);
- Recognition of planting (including trees) at the end of its viable life is important to ensure that it is removed and replaced in a timely manner to avoid eyesores.

### 4.3 Performance Standards

Performance Standards can be defined as follows in the context of this plan: **written specifications of the conditions that will exist when satisfactory works are completed.** Performance standards will be measurable against the specified outcomes required for a particular operation, within a particular area. Performance standards must be upheld by the contractor at all times and will be monitored on an ongoing basis through regular site inspections.

Performance standards are specified in section 5 of this document. All required maintenance operations are defined and detailed to provide both specifications for the landscape contractor to follow and a set of measurable outcomes to appraise and value the contractor's performance against the requirements of the contract.

### 4.4 Environmental Considerations

Responsible and sustainable landscape management is about balancing the performance standards with the required standard of maintenance. The following principles have guided the development of the specification:

- **Minimise use of non-renewable resources**
  - e.g. reduce lawn areas to reduce consumption of fossil fuels, reduce use of chemical inputs such as pesticides, where possible.

- **SuDS**
  - Sustainable Drainage Systems have been included in the design and are an integral part of the landscape, including filter drains in landscape areas and tree pits with drainage gravel or structural soil materials for soakaway.
- **Utilise low input systems**
  - Includes measures such as: mulching instead of herbicide use, where possible; encourage rough-cut or meadow grass where appropriate to avoid regular mowing.
- **On-site green waste recycling / mulching / composting**
  - Avoids excessive transportation and use of landfill
- **Use of environmentally friendly products where possible**
  - e.g. biodegradable herbicides, biodegradable tree ties, timber stakes.
- **Biodiversity & Nature Conservation**
  - Project ecologist will be consulted for any replacement planting or operations that could disturb wildlife in order to comply with best practice; All works involving tree surgery or removal of trees / hedgerows will be carried out outside the nesting season (unless required for health and safety or is unavoidable).
- **Control of Invasive Species**
  - It is an objective of this plan to control and prevent the spread of invasive species, and in particular, Giant Hogweed, in order to protect the biodiversity of the landscape.
- **Protection of site resources**
  - Appropriate maintenance will result in the protection of existing trees, vegetation and soil resource of the site.

## 5. Specifications for Landscape Maintenance Operations

### 5.1 Grass and Lawn Areas

#### (i) General

At all times grass to look lush, vigorous and of fine quality with a minimum weed content, and a minimum variation in height of the sward during the growing season. Cutting should take place on a regular basis. Grass cutting areas shall be cleared of litter and rubbish prior to grass-cutting taking place.

No ruts are to be caused due to poor ground conditions. During periods of poor weather, no grass is to remain lodged following cutting. In periods of prolonged wet weather or where ground is waterlogged, consult with Property Manager prior to engaging in grass cutting operations.

Noxious and competitive weeds such as Ragwort, Gorse, Thistle, Dock, Nettle, Briar, Horsetail and Dandelion shall not be allowed to establish in any grass areas.

#### (ii) Amenity Lawn Areas

Criterion	Performance Standards
Aesthetic / functional requirements	Amenity lawn areas are those grass areas which will be maintained for general access and amenity purposes, to create a lawn which is neat, healthy, close-cut and with minimal weed content.
Permitted mower type	Cylinder mower, Rotary mower, ride-on mower, tractor-pulled gang mower (note: subject to ground conditions; hand-mowing required in designated areas and/or where ground is soft)
Height of Cut	Minimum 20mm; maximum permissible height 50mm. At the commencement of the contract, following flowering cycle of seasonal bulbs or if grass cutting has been forestalled due to poor ground conditions resulting in the grass growing above the maximum permissible height, it shall be cut to 50mm on the initial cut, then to 25mm on the subsequent cut. Such initial long grass shall be collected and removed off site.
Frequency	Mow weekly during spring; summer and autumn; only when necessary in winter. Mowing is not permitted when ground conditions are very soft, waterlogged or frozen, or during spells of cold, drying winds or when the grass is frosty or wet.
Finish	Even finish. Vary direction/pattern of cutting every 3 months. Grass shall be trimmed from around the bases of walls and fences, back of footpaths and kerbs, litter bins, sluice valves and hydrant markers, trees, poles, signage and public lighting columns, etc., and this interface between grass and walls, fences, etc., as noted above, kept in a neat and tidy condition. This trimming shall be deemed to be included for at every grass-cutting. The Landscape Contractor is bound to comply with this instruction and herbicide application is not permitted to achieve this.
Clippings	To be gathered at every cut and disposed of in designated area or off-site. Box to be emptied regularly during cutting to avoid clumps being left on the grass.
Fertiliser	In mid-spring (late March to April), use a proprietary lawn fertiliser at the manufacturer's recommended rates, to be approved by the ER. Apply fertilisers when the soil is moist, or when rain is expected. If grass loses vigour and freshness between late spring and late summer (often May to August), repeat the application of lawn fertiliser.
Weed Control	Minimum weed content permitted i.e.: (1) <5% of species content; (2) <10% of total grass area. When necessary and agreed with ER, use a selective herbicide, with the active ingredient Mecoprop-C, MCPA, 2-4-D or Dicamba to control broad-leaved weeds in the sward. Weeds resistant to herbicide to be dug out by hand in autumn.

Scarifying	Scarifying to be carried out to keep levels of thatch (old grass stems, dead moss and other debris) at an acceptable level (i.e. less than 1cm deep). To remove thatch, rake vigorously but carefully with a power-scarifier. Recommended to be carried out in autumn only.
Aeration	Spiking with holes 10-15cm (4-6in) apart and deep to be carried out once per annum.
Rolling	Amenity grass areas should be reasonably even, with no variations greater than 25mm over a 1m straight edge. In September, to repair any uneven areas of the lawn, use an edging iron to slice through the turf and roll it back. Fork over the underlying ground and add or remove soil as needed. Replace the turf, pressing the edges together, roll with lawn roller (nominally 100kg, subject to site conditions) and water thoroughly.
Edging	Lawn to be edged by hand or edging machine regularly to leave an even, straight edge and to ensure that the grass or soil does not protrude over the edge by more than 25mm.
Over-seeding	After moss or weeds have been removed, or where grass is growing sparsely, over-seeding may be necessary. (Early autumn or mid-spring). Break up the surface with a fork and rake to leave a fine, even tilth; Sow grass seed at half the recommended rate (usually 10-15g/sq.m); lightly rake to incorporate the seed into the surface; water if weather remains dry for 2-3 days following seeding.
Watering	Watering to be carried out when required. Ensure that the water reaches a depth of 10cm (4in) after each watering. Rate: max. 20 litres per square metre.

*Indicators of under-performance:*

*Excessive weeds or weeds such as clover or moss indicate poor sward health; bare patches may indicate scalping or lack of vigour; yellowing or browning of sward may indicate drying out, under-feeding, herbicide drift or inappropriate use of herbicide; thatch build-up greater than 1cm depth; rutting of the surface, wheel marks or poor drainage may indicate compaction of soil caused by mowing in wet weather or use of unsuitable mower type.*

**(iii) Rough Cut Grass Areas**

Criterion	Performance Standards
Aesthetic / functional requirements	Rough cut grass areas are those grass areas which will not usually be accessed by users and will usually be in low priority areas, or in the background. These areas are to be maintained to create a grass area which is healthy and with minimal weed content, with grass allowed to grow relatively long between infrequent and regular cuts.
Permitted mower type	Strimmer, Rotary mower, ride-on mower, tractor-pulled gang mower (note: subject to ground conditions; strimming required in designated areas, areas of slope gradient greater than 1:3 and/or where ground is soft)
Height of Cut	Grass areas shall be cut to a height of c. 75mm
Frequency	5no. times during the growing season, at regular intervals of approximately 6 weeks
Finish	Rough cut shall mean grass of minimum height 75mm, with informal appearance
Clippings	To be gathered at every cut and disposed of in designated area or off-site.
Fertiliser	In mid-spring (late March to April), use a proprietary lawn fertiliser at the manufacturer's recommended rates, to be approved by the ER. Apply fertilisers when the soil is moist, or when rain is expected.
Weed Control	Minimum weed content permitted i.e.: (1) <5% of species content; (2) <15% of total grass area. When necessary and agreed with ER, use a selective herbicide, with the active ingredient Mecoprop-C, MCPA, 2-4-D or Dicamba to control broad-leaved weeds in the sward. Noxious or invasive weeds to be spot treated by controlled droplet applicator or glove with Glyphosate (Round-Up or equal) in May, June and August and prevented from flowering.
Edging	Rough-cut grass areas to be edged by hand or edging machine regularly to leave an even, straight edge and to ensure that the grass or soil does not protrude over the edge by more than 25mm

*Indicators of under-performance:*

*Excessive weeds or occurrence of noxious or invasive weeds unacceptable; rutting of the surface, wheel marks or poor drainage may indicate compaction of soil caused by mowing in wet weather or use of unsuitable mower type.*

**(iv) Meadow Grass / Wildflower Areas**

Criterion	Performance Standards
Aesthetic / functional requirements	Meadow grass or wildflower areas are those areas which will not usually be accessed by users and will usually be in low priority areas, or kept for biodiversity reasons. These areas are to be maintained to create a meadow area which is healthy and with minimal noxious or invasive weed content, with grass allowed to grow relatively long between infrequent and regular cuts.
Permitted mower type	Strimmer, Rotary mower, ride-on mower, tractor-pulled gang mower (note: subject to ground conditions; strimming required in designated areas, areas of slope gradient greater than 1:3 and/or where ground is soft)
Height of Cut	Meadow grass areas shall be cut to a height of c. 75mm
Frequency	3no. times during the growing season, in May, July and September
Finish	Meadow
Clippings	To be gathered at every cut and disposed of in designated area or off-site
Weed Control	Noxious or invasive weeds to be spot treated by controlled droplet applicator or glove with Glyphosate (Round-Up or equal) in May, June and August and prevented from flowering
Edging	Meadow grass areas to be edged by hand or edging machine regularly to leave an even, straight edge and to ensure that the grass or soil does not protrude over the edge by more than 25mm

*Indicators of under-performance:*

*Occurrence of noxious or invasive weeds unacceptable.*

## 5.2 Shrub Planting

**(i) Groundcover / Mixed Borders / Mass Shrub Plantation**

Criterion	Performance Standards
Aesthetic / functional requirements	Shrub planting areas shall be kept clean at all times, with an even finish. Plants to have a healthy, lush appearance, typical for plant species and time of year.
Weed Control	Weeds shall not be allowed to cover more than 5% of the ground at any one time, neither shall weeds exceed 50mm in height. Residual herbicide permitted for established shrub areas.
Bark Mulch	Required – min. 50mm deep; to be kept topped up at all times.
Fertiliser	Annual feeding with 50g/sq.m of general-purpose fertiliser in February. (Rake back mulch prior to application.)
Pruning / Clipping	Pruning once per annum to maintain the typical size and form of the plant, for sightlines and for plant health; all clippings to be gathered at every pruning and disposed of in designated area or off-site.
Edging	Beds to be edged by hand or edging machine twice per annum to leave an even, straight edge. Shrubs or soil not to protrude past the edge by more than 50mm.
Watering	Watering required only in periods of prolonged drought (i.e. after more than 2 weeks)

**(ii) Specimen Shrubs**

Criterion	Performance Standards
Aesthetic / functional requirements	Specimen shrub planting areas shall be kept clean at all times, with an even finish. Shrubs to have a healthy, lush appearance at all times, typical for plant species and time of year.
Weed Control	No weeds permitted in the shrub area. Established shrub areas may be treated with an approved residual herbicide to provide year round weed control.
Bark Mulch	Required – 75mm deep; to be kept topped up at all times.
Fertiliser	Annual feeding with 50-100g/sq.m of general-purpose fertiliser in February. (Rake back mulch prior to application.)
Pruning / Clipping	Regular pruning as necessary to maintain the typical size, habit and form of the plant, for health and to maintain best appearance; all clippings to be gathered at every pruning and disposed of in designated area or off-site.
Watering	Watering required to ensure consistent availability of water to plant during periods of drought (i.e. after more than 5 days) - minimum

**(iii) Hedge – Free Growing**

Criterion	Performance Standards
Aesthetic / functional requirements	Even, clean finish to ground plane. Hedge to have a healthy, lush appearance, typical for plant species and time of year. Relatively informal habit acceptable.
Weed Control	No weeds permitted in the hedge area. Established hedge areas may be treated with an approved residual herbicide to provide year round weed control.
Bark Mulch	Required – 50mm deep; to be kept topped up at all times.
Fertiliser	Annual feeding with 50g/sq.m of general-purpose fertiliser in February. (Rake back mulch prior to application.)
Pruning / Clipping	Pruning once per annum as necessary to maintain the required height and width, and prevent “leggy” growth; all clippings to be gathered at every pruning and disposed of in designated area or off-site. Laying may be required for Hawthorn and Blackthorn hedges if hedge growth becomes thin at the base.
Watering	Watering required only in periods of prolonged drought (i.e. after more than 2 weeks)

**(iv) Hedge – Pruned (including topiary)**

Criterion	Performance Standards
Aesthetic / functional requirements	Even, clean finish to ground plane. Hedge to have a healthy, lush appearance, typical for plant species and time of year. Formal habit to be maintained throughout year. Formal habit of hedge to be defined and maintained at all times.
Weed Control	No weeds permitted in the shrub area. Established shrub areas may be treated with an approved residual herbicide to provide year round weed control.
Bark Mulch	Required – 75mm deep; to be kept topped up at all times.
Fertiliser	Annual feeding with 50-100g/sq.m of general-purpose fertiliser in February. (Rake back mulch prior to application.)
Pruning / Clipping	Regular pruning as necessary to maintain the required height and width of the plant, to maintain best appearance; all clippings to be gathered at every pruning and disposed of in designated area or off-site.
Watering	Watering required only in periods of prolonged drought (i.e. after more than 2 weeks)



**(v) Native Shrub Plantation**

Criterion	Performance Standards
Aesthetic / functional requirements	Even, clean finish to ground plane. Hedge to have a healthy, lush appearance, typical for plant species and time of year. Relatively informal habit acceptable.
Weed Control	Weeds shall not be allowed to cover more than 5% of the ground at any one time, neither shall weeds exceed 50mm in height. Residual herbicide permitted for established areas.
Bark Mulch	Required for high prominence areas; recommended for medium areas – 50mm deep; to be kept topped up at all times.
Fertiliser	Not required.
Pruning / Clipping	Pruning once per annum for shrubs such as Dogwood and Guelder Rose or to control height and spread when necessary.
Watering	Watering required only in periods of prolonged drought (i.e. after more than 2 weeks)

**(vi) Scrub - naturally occurring**

No maintenance operations required, except to ensure that any edge plants are kept cut back at least 1m from road edges and tidy where visible or prominent.

**5.3 Trees & Woodlands****(i) General:**

- Canopies overhanging a pedestrian path to be maintained to 2.2m and canopies overhanging vehicular access to 4m.
- Limb damage caused by wind, passing traffic, etc. to be pruned resulting in a clean even wound.
- No signs, security boxes, etc. to be attached to trees.
- Surface tree roots not to cause a trip or mowing hazard. In grass areas, top up soil over roots and re-seed.
- Raised paviers or cracked/bulging walls due to root growth are to be reported to the Contract Administrator.
- Exposed roots from construction works to be kept moist by wrapping damp hessian around roots until soil is backfilled and then apply a one off generous application of water. Root damage to be pruned resulting in a clean even wound prior to backfilling / topsoiling.
- Control of ivy and suckering on the trunks of trees within falling distance of activity
- Informal monitoring of trees for change of condition or evidence of a fungal fruiting body.

**(ii) Specimen, Solitary and Avenue Trees**

All trees to be maintained in accordance with requirements for species and habit to be maintained in accordance typical form for tree. Tree trunk will be kept visible for defect inspection with control of ivy and removal of suckering. Mulch 1m diameter will be maintained around all individual trees within grassed areas. Stakes and ties to be retained for a maximum period of 3

years, with tie loosened annually and both stake and tie to be removed after 3 year period. All nursery marking, bamboo and labels to be removed off all trees. Tree grilles in hard surface areas to be maintained weed free.

Any visible change in condition to be reported.

### **(iii) Tree Groups, Woodland, Grid, Hedgerow Trees**

Such areas shall be kept free of noxious and pernicious weeds at all times. Mulch or spray rings 1m diameter will be maintained along group perimeter and around all plants in young woodland areas where canopy cover has not been achieved. Established woodland areas shall not be treated with herbicide except where necessary for the removal of noxious and invasive weeds including Ragwort, Gorse, Thistle, and Dock, hogweed, bramble and any others. Japanese knotweed shall not be allowed to establish in any woodland areas. Bramble should not exceed 20% of ground cover of any woodland. Ivy shall be controlled and shall not be allowed to establish itself on trees along the perimeter and within falling distance of activity within woodland areas. Understorey (excluding saplings) not to exceed 1m in height in order to retain visibility for user safety in areas of activity. Tree numbers not to exceed 4 per sq.m of trees with a girth of less than 250mm and numbers not to exceed 2 per sq.m for trees with a girth of over 300mm. Fallen or felled trees in woodland areas to be maintained on-site where permissible, for reasons of biodiversity and ecology which contribute to the overall health of the woodland.

## **5.4 Herbaceous Perennial Planting (including Ferns and Ivy)**

### **(i) Bulbs**

Watering: Ensure that bulbs have adequate water throughout growth period, up until cutting back occurs (see below).

Fertiliser: Apply approved general purpose fertiliser to all bulb areas at nominal rate of 35g/sq.m in late February.

Cutting Back: Cut back dead foliage to ground level six weeks after the end of flowering (or earlier if foliage is yellow and straw-like). Do not tie or knot the leaves.

*Note: Herbicides may not be used in or around bulb areas.*

## **5.5 Hard Landscape Surfaces & Signage**

Hard Standing including roads, paved areas, pavements, and kerb-lines - shall be kept clean at all times, with no growth of weeds and without moss infestation. Roads and kerb lines shall be kept free of litter and build up of grit and debris through the implementation of a regular sweeping program.

### **(i) Weed Control**

All paved areas such as footpaths, kerb lines, feature paving, gravel areas, etc., throughout the site are to be maintained weed free at all times. The application of a suitable broad-spectrum herbicide e.g. Glyphosate (*Roundup Bi-Active* or equal and approved) shall be applied 3no. times per annum to achieve this. Once per annum a suitable chemical to treat moss shall be applied where it has established on hard surfaces. An initial physical treatment, such as scraping using a spade, will be required to remove existing moss growth prior to spraying.

### **(ii) Sweeping**

Sweeping shall mean sweeping of feature paving areas, footpaths and kerb lines along all public roads (edge of road) and removal of all grit, rubbish and leaves from these areas. Soil wash from beds on to paved areas should also be swept. This work to be executed fortnightly.

*Note: Particular attention is required during the period of October/ November to deal with leaf fall.*

### **(iii) Cleaning**

Cleaning shall mean the removal of paper, plastic bags and all other rubbish. Cleaning shall be carried out as follows:

- Fine cut grass areas, all paved and hard standing areas, footpaths and kerb lines: This work to be executed prior to grass cutting on each grass cutting visit. Cleaning shall be carried out 36no. times per annum, including winter.
- Rough cut grass areas: prior to each scheduled grass cut, minimum 8no. times per annum.
- Tree groups, boundary tree areas, shrub maintenance areas, all other areas: 8no. times per annum.

Cleaning shall also include the removal of grit and rubbish from road gullies, drains, Aco drains and collapsible bollards twice per year.

### **(iv) Signage**

All signs are to be cleaned to a high standard 4 times per year.

### **(v) Gullies**

All roadside gullies are to be inspected monthly and if full or blocked, must be cleared out as appropriate.

## **5.6 Natural Areas**

No maintenance operations are permitted within areas designated as natural zones. Neither is dumping of any arisings, storage of materials or any other related activity.

## **5.8 Weed Control**

### **5.8.1 General**

Minimal amount of herbicidal chemicals are to be utilised on the site, with non-chemical means of weed control to be preferred (mulching, mechanical control, hand weeding, etc. where feasible). Biodegradable herbicides are to be preferred where herbicide use is required. Prior to executing weed control involving the use of herbicides, details of the products to be used including a Material Safety Data Sheet (MSDS) for each product is to be provided to the Contract Administrator for each of the herbicides proposed. A sample herbicide information chart is included in Addendum A.

Where translocated herbicides are applied, spray drift should be avoided and spray guards fitted to apparatus. Where feasible, spot treatment using CDA (Controlled Droplet Applicator) or glove preferred. Use of residual herbicides shall not be used in areas of herbaceous planting, in the initial year following planting of new shrubs or over areas of bare ground within shrub beds where replacement planting is to be carried out. Hand weeding in planting beds will be required where there is a large component of herbaceous material, bulbs or prostrate groundcover plants.

### **5.8.2 Invasive Weeds**

Invasive weeds of any kind, most particularly Japanese Knotweed, Winter Heliotrope, Giant Hogweed and Himalayan Balsam (all identified on this site) shall not be allowed to establish in any area of the site. It will be the responsibility of the contractor

to be able to identify same and treat at first sign of emergence. Treatment for all except Japanese Knotweed to consist of removal of weed by mechanical means, treating any remaining plant parts with Glyphosate (e.g. *Roundup* or equal).

### **5.9 SuDS Features**

Sides are to be managed as a meadow – see clause 5.1 (iv). Cutting to take place when water levels are low.

## **6. Duties of Contractor**

The contractor shall be required to complete a site specific maintenance programme and attend site in accordance with the program agreed with the Contract Administrator. During the course of the contract the contractor shall supply after each visit to site a record of attendance using site attendance record sheets. These should be signed by the contractor's site foreman and manager and retained in a file for use as an appendix to the payment application. Failure to complete works on the prescribed date, may result in determination of the contract, except where an adjustment to program has been agreed in advance with the Contract Administrator.

At the end of every month the contract manager shall complete the monthly report sheets to clarify the completion of works for the particular month. Items of work not completed shall be noted and a timeframe for their completion indicated. The forestalled works must be attended to at the first opportunity in the month following the submission of the monthly report sheet, unless exceptional circumstances or bad weather prevent the work from being completed. In this case the work shall be attended to, as soon as is practicable, and by agreement with the Contract Administrator.

Monthly program sheets (See Section 8) shall be signed by the contractor's manager and forwarded to the Contract Administrator for verification. Upon verification the document will be returned to the contractor and shall be attached at the time of payment application. If necessary, a site visit will be undertaken with the contractor to verify completion of works. The completed monthly report sheets shall be used as the basis for payment.

In relation to Health and Safety, the landscape contractor will be required to maintain a safety file and this must be made available for inspection upon request. All possible precautions and risk management strategies must be in place in relation to safety of employees, personal protective equipment, use and maintenance of equipment/vehicles, signage when works are underway, procedures for closing off areas while works are in progress, traffic management, etc. as required. Any incident or accident must be reported to the Contract Administrator and recorded in the safety file.

## **7. Inspections by Employer**

As part of the management of this contract, eight critical inspections per annum shall be arranged with the Contract Administrator in attendance. These may not be notified to the landscape contractor. The Contract Administrator will produce a report of the site visit, commenting on the appearance of the site and examining each aspect of work in detail. The Landscape Architect may also direct resources to a certain area of work, in agreement with the Property Manager. It is at such

dates that standards will be reviewed, problems arising rectified and issues of dispute arising from the concerned parties will be settled.

A preliminary schedule of critical inspection dates is as follows:

1. February
2. March
3. April
4. May
5. June
6. July
7. August
8. September
9. October
10. December

## 8. Monthly Maintenance Operations Schedule

The following tables give an indicative outline of the required monthly maintenance operations, based on the specification outlined above.

### Maintenance Program - January

Item	Description
1.1	Yearly maintenance Shrub and tree planting Tree pruning Hedge cutting
1.2	Weed free circles around trees/whips Check tree stakes and ties
1.3	Hard Standing Maintenance and Cleaning Litter pick 1 Litter pick 2 Litter pick 3 Road/Paved area sweep 1 Road Gulley cleaning

**Maintenance Program - February**

Item	Description
2.1	Yearly maintenance Shrub and tree planting Tree pruning Check tree stakes and ties
2.2	Hard Standing Maintenance and Cleaning Litter pick 1 Litter pick 2 Litter pick 3 Road/Paved area sweep 1 Road Gulley cleaning

**Maintenance Program - March**

Item	Description
3.1	Yearly maintenance Shrub and tree planting Shrub Pruning Tree pruning Hedge cutting Hedgerow cutting Hand Weeding in shrub areas Weed free circles around trees/whips
3.2	Grassed areas – Fine Cutting Cut 1 Cut 2 Grass trimming Grass edging Weed control to rough cut/rough ground areas
3.3	Grass reinstatement
3.4	Hard Standing Maintenance and Cleaning Litter pick 1 Litter pick 2 Litter pick 3 Weed/Moss control to hard landscape areas Clean all signs

**Maintenance Program - April**

Item	Description
4.1	Yearly maintenance Shrub and tree planting Shrub Pruning Hedgerow cutting Herbicide application to shrub/woodland areas Hand Weeding in shrub areas Weed free circles around trees/whips Apply fertiliser
4.2	Grassed areas – Fine Cutting Cut 1 Cut 2 Cut 3 Cut 4 Grass trimming Grass edging Weed/Moss Control Fertiliser Application
4.3	Grassed areas – Rough Cutting Weed control to rough cut/rough ground areas
4.4	Grass reinstatement
4.5	Hard Standing Maintenance and Cleaning Litter pick 1 Litter pick 2 Litter pick 3 Weed/Moss control to hard landscape areas



## Maintenance Program - May

Item	Description
5.1	Yearly maintenance Shrub and tree planting Hedge cutting Herbicide application to shrub/woodland areas Hand Weeding in shrub areas Apply fertiliser Watering
5.2	Grassed areas – Fine Cutting Cut 1 Cut 2 Cut 3 Cut 4 Grass trimming 1 Grass trimming 2 Weed/Moss Control Fertiliser Application
5.3	Grassed areas – Rough Cutting Weed control to rough cut/rough ground areas
5.4	Grass reinstatement
5.5	Hard Standing Maintenance and Cleaning Litter pick 1 Litter pick 2 Litter pick 3 Weed/Moss control to hard landscape areas Road/Paved area sweep 1
5.6	Watering

## Maintenance Program - June

Item	Description
6.1	Yearly maintenance Shrub and tree planting Tree pruning Herbicide application to shrub/woodland areas Hand Weeding in shrub areas Weed free circles around trees/whips Apply fertiliser Watering
6.2	Grassed areas – Fine Cutting Cut 1 Cut 2 Cut 3 Cut 4 Grass trimming Weed/Moss Control
6.3	Grassed areas – Rough Cutting Weed control to rough cut/rough ground areas
6.4	Hard Standing Maintenance and Cleaning Litter pick 1 Litter pick 2 Litter pick 3 Weed/Moss control to hard landscape areas Road/Paved area sweep 1 Clean all signs
6.5	Watering of all trees & shrubs

**Maintenance Program - July**

Item	Description
7.1	Yearly maintenance - Shrub and tree planting Hand Weeding in shrub areas Watering
7.2	Grassed areas – Fine Cutting Cut 1 Cut 2 Cut 3 Cut 4 Grass trimming 1 Grass trimming 2 Grass edging
7.3	Hard Standing Maintenance and Cleaning Litter pick 1 Litter pick 2 Litter pick 3
7.4	Watering of all trees & shrubs

**Maintenance Program - August**

Item	Description
8.1	Yearly maintenance Shrub and tree planting Shrub Pruning Hand Weeding in shrub areas Weed free circles around trees/whips Watering
8.2	Grassed areas – Fine Cutting Cut 1 Cut 2 Cut 3 Cut 4 Grass trimming
8.3	Hard Standing Maintenance and Cleaning Litter pick 1 Litter pick 2 Litter pick 3 Road/Paved area sweep 1
8.4	Watering of all trees & shrubs

## Maintenance Program - September

Item	Description
9.1	Yearly maintenance Shrub and tree planting Shrub Pruning Hedge cutting Herbicide application to shrub/woodland areas Hand Weeding in shrub areas Weed free circles around trees/whips Apply fertiliser Watering
9.2	Grassed areas – Fine Cutting Cut 1 Cut 2 Cut 3 Cut 4 Grass trimming 1 as per clause 3.3 (c) Grass trimming 2 as per clause 3.3 (c) Weed/Moss Control Fertiliser Application
9.2	Grassed areas – Rough Cutting Weed control to rough cut/rough ground areas
9.4	Grass reinstatement
9.5	Hard Standing Maintenance and Cleaning Litter pick 1 Litter pick 2 Litter pick 3 Weed/Moss control to hard landscape areas Road/Paved area sweep 1 Road Gulley cleaning Clean all signs
9.6	Watering of all trees & shrubs
9.7	Attenuation Pond - cleaning, removal of detritus

## Maintenance Program - October

Item	Description
10.1	Yearly maintenance Shrub and tree planting Tree pruning Hedge cutting Hedgerow cutting Herbicide application to shrub/woodland areas Hand Weeding in shrub areas Weed free circles around trees/whips Apply fertiliser
10.2	Grassed areas – Fine Cutting Cut 1 Cut 2 Grass trimming Grass edging
10.3	Grassed areas – Rough Cutting Weed control to rough cut/rough ground areas
10.4	Grass reinstatement
10.5	Hard Standing Maintenance and Cleaning Litter pick 1 Litter pick 2 Litter pick 3 Weed/Moss control to hard landscape areas Road/Paved area sweep 1 Road/Paved area sweep 2

### Maintenance Program - November

Item	Description
11.1	Yearly maintenance Shrub and tree planting Hedgerow cutting Check tree stakes and ties
11.2	Grassed areas – Fine Cutting Cut 1 Cut 2
11.3	Hard Standing Maintenance and Cleaning Litter pick 1 Litter pick 2 Litter pick 3 Road/Paved area sweep 1 Road/Paved area sweep 2 Road/Paved area sweep 3

### Maintenance Program - December

Item	Description
12.1	Yearly maintenance Shrub and tree planting Tree pruning Check tree stakes and ties
12.2	Grassed areas – Fine Cutting Cut 1 Grass trimming as per clause 3.3 (c)
12.3	Hard Standing Maintenance and Cleaning Litter pick 1 Litter pick 2 Litter pick 3 Road/Paved area sweep 1 Clean all signs

# OUTLINE LANDSCAPE SPECIFICATION

## 1. SPECIFICATIONS FOR SUPPLY OF NURSERY STOCK

### 1.1. Supply of nursery stock:

The nursery stock material will be delivered following consultation between the employer's representative, landscape Contractor and the selected nursery. It is intended to serve notice of delivery by means of phased orders at least two months prior to commencement of the dormant season in November of that year. Delivery will be at all times by means of covered vehicles, and all plant material will be clearly labelled. The source of origin must be from the selected nursery, as no other additional stock from other nurseries will be permitted without prior inspection and approval

### 1.2. Nursery stock:

All plant material shall be good quality nursery stock, free from fungal, bacterial or viral infection, aphids, red spider or other insect pests and any physical damage. It shall comply with the requirements of B.S. 3936: Parts 1-10: 1965 Specification for Nursery Stock, where applicable.

All plants shall have been nursery grown in accordance with good practice and shall be supplied through the normal channels of the wholesale nursery trade. They shall have the habit of growth that is normal for the species. Country of origin must be shown in all cases for species grown from seed.

Unless otherwise stated, the plant materials shall be supplied in accordance with the following codes where stated:

1+0	1 Year old seedling
1+1	1 Year old seedling lined out for 1 year
1+2	1 Year old seedling lined out for 2 years
1+1+1	1 Year old seedling lined out for 1 year, lifted and lined out for one further year
2+2	2 Year old seedling lined out for 2 years
0/1	1 Year old Hardwood cutting
0/2	2 Year old Hardwood cutting
2X	Twice transplanted tree
3X	Three times transplanted tree
4X	Four times transplanted tree
P9	Containerised plant in 9cm pot
CG / c/g	Containerised plant
gt.	Girth
ht.	Height
RB / r/b	Rootball
BR / b/r	Bareroot
MS	Multi-stemmed
Ftd	Feathered trees

### 1.3. Species:

All plants supplied shall be exactly true to name as shown in the plant schedules. Unless stipulated, varieties with variegated and/or coloured leaves will not be accepted, and any plant found to be of this type upon leafing out shall be replaced by the contractor at his/her own expense.



Bundles of plants shall be marked in conformity with B.S. 3936: Part 1: 1965 and B.S. 3936: part 4: 1966. The nursery supplier shall replace any plants which, on leafing out, are found not to conform to the labels. Definitions of all terms used are in accordance with the following British Standards: -

**B.S. No. 3936: Part 1: 1992 entitled "Nursery Stock- Trees and Shrubs"**

**B.S. No. 3936: Part 4: 1984 entitled "Nursery Stock- Forest Trees"**

**B.S. No. 3936: 1992 entitled "Specification for Nursery Stock"**

#### **1.4. Tree and Shrub Specifications:**

Trees shall have a sturdy, reasonably straight stem, and a well-defined straight and upright central leader, with branches growing out of the stem with reasonable symmetry. The crown and root systems shall be well formed. Roots shall be in reasonable balance with the crown and shall be conducive to successful transplantation. All trees shall be clearly labelled.

##### **1.4.1. Root-Balled Trees**

Trees shall have a clear stem from ground level to the lowest branch and a total height as appropriate to the girth size, and the minimum girth as specified shall be measured at 1.0m above ground level– all as required under BS3936: Part 1. Trees shall be well furnished with lateral fibrous roots, and shall be lifted without severance of major roots. All nursery stock trees shall have been undercut and provided with a rootball of min. diameter appropriate to girth and height. All rootballs shall be wire and hessian-wrapped.

##### **1.4.2. Multistem Trees - Rootballed**

Multistem trees shall have a minimum of 3no. stems originating from or near ground level (<0.3m) and be of reasonable bushiness and health, with a well grown root system and a total height as specified on the drawings and schedules. Trees shall be well furnished with lateral fibrous roots, and shall be lifted without severance of major roots. All rootballs shall be wire and hessian-wrapped. All multistem trees stock trees shall have been undercut a minimum of 3no. times and provided with a rootball of sufficient size and diameter to enable healthy transplanting and successful establishment and growth. All rootballs shall be wire and hessian-wrapped.

##### **1.4.3. Container grown Shrubs, Ferns, Grasses, Perennials, Bamboo, Hedging**

Containerised Shrubs and Climbers shall be of the size specified in the schedules, with several stems originating from or near ground level and of reasonable bushiness, healthy, vigorous and with a sound root system. Pots or containers shall be appropriate to the size of shrub supplied and clearly labelled. Shrubs shall not be pot bound or with girdled or restricted roots. Shoots and aerial parts shall be free of disease, and/or damaged leaves or shoots.

##### **1.4.4. Hedging Stock – Bare-Root**

Hedging stock shall be of size specified in the schedules, with several stems originating from or near ground level, with reasonable bushiness, healthy, vigorous and with a sound root system. Shoots, roots and aerial parts shall be free of disease, and/or damaged leaves or shoots. Transplants shall be not less than one year old. Trees of species not listed in B.S. 3936: Part 4: shall be sturdy, with a balanced root and shoot development. Size shall conform to the schedules. Trees shall be well furnished with lateral fibrous roots, and shall be lifted without severance of major roots. Roots shall be of the habit normal for the species, without deformation. Transplants shall be clearly labelled

and wrapped in polythene from the time of lifting until planting to conserve moisture. Shoots, roots and aerial parts shall be free of disease, and/or damaged leaves or shoots.

#### **1.4.5. Hedging Stock – Rootballed**

Hedging stock shall be of size specified in the schedules, with several stems originating from or near ground level, with reasonable bushiness, healthy, vigorous and with a sound root system. Shoots, roots and aerial parts shall be free of disease, and/or damaged leaves or shoots. Such hedging shall be provided with a rootball of sufficient size and diameter to enable healthy transplanting and successful establishment and growth. Rootballs shall be hessian-wrapped only for any plant under 1m in height.

#### **1.4.6. Bulbs and Corms**

Bulbs and Corms should be supplied whole and entire, certified disease and disorder free, dry, and in a dormant, leafless, rootless state. Bulbs must be viable and provenance certification may be required to ensure that bulbs have not been stored too long or become unviable.

## **2. SPECIFICATIONS FOR CARE OF NURSERY STOCK**

### **2.1. Protection:**

The interval between the lifting of stock at the nursery and planting on site is to be kept to an absolute minimum. Plants shall be protected from drying out and from damage in transport. All stock awaiting transport shall be protected from the wind and frost and from drying out.

### **2.2. Damage**

On completion of lifting of plants in the nursery, any broken shoots or severed roots shall be pruned, areas of damaged bark neatly pared back to sound tissue.

### **2.3. Inspections**

The Employer's representative will inspect the hardy nursery stock during the execution of the works. **Only plants selected and approved in the landscape contractors selected nursery will be accepted on the site.**

### **2.4. Delivery and heeling in**

All plants will be delivered on a phased basis as called up in advance in agreement with the Employer's representative and the appointed Landscape Contractor. In the event of the Employer's representative being dissatisfied with the care and attention given to the stocks, following heeling-in or arrival on site, he shall notify the Landscape Contractor who shall take steps to ensure careful heeling-in procedures. Any damaged plants must be replaced by the Landscape Contractor entirely at his own expense.

The preparation of the heeling-in area and its subsequent maintenance is the sole responsibility of the Landscape contractor. No responsibility for the maintenance of stock delivered to site will attach to the employer whilst stock is protected on site, even if the stock requires protection beyond the normal planting season.

### 3. SPECIFICATIONS FOR SITE OPERATIONS

#### 3.1. Setting out:

Setting out shall be in accordance with site meetings with the Employer's Representative, and the drawings listed in the preliminaries. No planting works shall take place when the soil /fill is in a waterlogged condition or the ground is frozen. Transplants in mixtures shall be planted in staggered rows. Species shall be planted in groups, as indicated in the planting drawings. No planting shall take place until all planting holes (with ameliorants) have been inspected and approved by the Employer's Representative, or a person appointed by him as a representative, to ensure accordance with the specifications. No planting shall take place when ground conditions are frozen or waterlogged. All planting holes shall be opened and closed on the same day.

#### 3.2. Earthworks, Soil and Grading

##### **3.2.1. Stripping and storage of existing soil on-site**

All soil removed during grading works is to be placed in storage bunds on-site. Topsoil must be stripped separately from subsoil for re-use in landscape works and must be fit for purpose. Topsoil would be defined as soil that has a high content of organic material, usually corresponding to the 'O' and/or 'A' horizon of the soil profile. Subsoil would be all mineral soils that do not have a substantial organic component. Where the difference between topsoil and subsoil is unclear, consult the Employer's Representative.

Subsoil that is excess to fill requirements is to be stored on-site in a designated location, to be agreed with the Employer's Representative. Subsoil shall be stored in stable mounds with side slopes of gradient no more than 1:2 and an overall height of no more than 2m. Mounds to be seeded with wildflower seed as per clause 3.3.3.

Topsoil shall be stripped using a tracked vehicle to avoid subsoil compaction. Avoid tracking over or compaction of the topsoil. Topsoil should be stripped and dumped to form the berms using the dump and back-actor method. Double handling of topsoil is to be avoided. Topsoil that has been compacted shall be removed off site and replaced at the contractor's expense.

Topsoil shall be stored in stockpiles of dimensions no greater than 10m long x 5m wide x 0.5m high, such that a long, narrow and low berm is created to preserve the intrinsic qualities (structure and soil life) of the topsoil whilst in storage. The topsoil shall be loose tipped to create the berm and lightly compacted with the back of a digger bucket to create a degree of compaction suitable for storage, with side slopes of gradient no more than 1:2. No machinery shall be run over the soil berm. Berms shall be seeded with grass seed as per clause 3.3.2.

##### **3.2.2. Subsoil**

###### (a) Supply of Subsoil

Existing subsoil shall be used for all grading works.

Imported subsoil – if required - shall be sourced from a reputable source and be free of waste, chemicals, large stones, builder's rubble and any other detritus.

(b) Formation of Slopes/Mounds

Subsoil to be used to form even slopes or mounding to contours shown on drawings. Subsoil to be formed to smooth contours to 150mm below finished levels indicated on drawings, where the area is to be grassed or 300mm.

(c) Formation of Grassed Areas

Subsoil to be graded accurately to contours / levels / falls / crossfalls shown on drawings.

### **3.2.3. Topsoil**

*(a) Supply of Topsoil*

Existing topsoil may be used for all grading and planting works, if it complies with the following specification, which would also apply to imported topsoil, as required. It is expected that imported topsoil will be required for all planting areas.

Topsoil shall be sourced from a reputable source and be free of waste, chemicals, large stones, builder's rubble and any other detritus. Topsoil shall have good structure, be friable, fresh and free-draining with at least 20% organic content. Imported topsoil shall comply with BS3882: 1994, and shall be free draining sandy loam, clay or other approved. It shall be free of stones over 40 mm diameter, and stones over 10 mm diameter shall not exceed 5% by weight. It shall be free from subsoil, sods, roots of trees and shrubs, and rubbish. Topsoil shall be from the original surface layer of grassland or cultivated land, to a maximum depth of 200 mm. Soils from woodland, heathland, bog or contaminated land will not be acceptable.

*(b) Removal of topsoil:*

In areas to be regraded, all topsoil should be stripped and stored as per following clauses.

*(c) Weather and Soil Conditions*

All work involving topsoil shall not be carried out, unless the Employer's Representative permits otherwise:

- Where areas have been exposed to a cumulative rainfall exceeding 60mm over the preceding 28 days measured at a point approved by the Employer's Representative; or
- Where soil moisture content is wetter than the Plastic Limit (PL) of the soil less 3%. The PL of the soil can be assessed in the field as the minimum moisture content at which the soil can be rolled and moulded into a thin thread approximately 3mm in diameter without breaking or cracking and in a laboratory according to BS 1377:Part 2.
- When heavy rain is falling;
- During periods of severe frost when the soil is frozen. Handling frozen soil will cause damage to the soil structure.

*(d) Topsoil Spreading*

Topsoil shall be moved and spread only in dry weather. Before topsoiling, remove all stones, rubble and rubbish over 75mm diameter from the surface of the subsoil formation. Dig out any areas polluted by oil or chemicals and

make up with clean soil. Loaders shall load from the base of the soil storage berm only. Placement of soil should be carried out using a tracked vehicle to avoid subsoil compaction. Reinstated areas of topsoil shall not to be tracked over. The topsoil shall be allowed to settle to a thickness of 300mm and the contractor shall make full allowance for such settlement in applying the topsoil. Uneven areas shall be topped up as necessary.

*(e) Topsoil Depths & Provision*

The following depths should be provided for topsoiled areas:

- (i) Grassed Areas: 150mm
- (ii) Bare-root planting: 300mm
- (iii) Shrub planting: 450mm
- (iv) Tree planting: Pit to specified size, depending on size of tree (see relevant Clauses)

*(f) Grading*

Topsoil to be graded accurately to contours / levels / falls / crossfalls shown on drawings. Glazed / compacted areas of subsoil to be roughened or ripped as necessary. (Drainage to be installed where necessary to Engineer's specification.) Any compacted areas to be ripped after placing of soil.

*(g) Compacted areas*

Any areas identified as compacted following completion shall be deep ripped and re-graded or re-soiled as necessary, to ensure a free-draining soil gradient and to avoid anaerobic conditions developing in the topsoil.

**3.2.4. Structural Soil / Tree Pits**

Structural Soil to consist of the following, in the proportions determined by the manufacturer:

Range of use	Tree planting pits under high traffic areas
Material	Crushed stone, sandy clay loam, peat-free compost
Total pore volume	> 35% Vol
Moisture Content	12-20%
Key data	Total Nitrogen 500 mg/L Phosphorous 300mg/L Potassium 450 mg/L Magnesium 200 mg/L Calcium 3000 mg/L Sulphur 250 mg/L
Organic content (LOL)	3-7 % w/w
pH value	6.5-7.8
Water permeability	1.7 x 10 m/s
California Bearing Ratio	greater than 50
Bulk density	Approx. 1.8ton/m <sup>3</sup>

The structural soil shall be placed to the line and graded as shown on the plans or as directed by the Landscape Architect / Engineer.

- Install structural soil in 150mm (6") lifts and compact each lift. Compact all materials to 90-95% compaction from a standard AASHTO Compaction Curve (AASHTO T 99). Adequate compaction can be achieved with the use of a standard pedestrian plate compactor.
- No placement or compaction shall occur when moisture content exceeds 2% above the optimum compaction moisture content as determined by AASHTO T 99 (ASTM D698).
- Protect Structural Soil during delays in compaction with plastic or plywood as directed by the Engineer.
- Field tested permeability shall be within 12 - 25mm (0.5" and 1") per hour.

Engineering specifications for pavement installation call for a high degree of compaction which is generally specified as 95% Proctor or peak density, to ensure that pavements would not subside, crack, or fail. When CU-Structural Soil is correctly installed and compacted to 95% - 100% Proctor Density, it has a CBR (California Bearing Ratio) of 50 or greater.

NOTE RE STRUCTURAL SOIL: Alternative specification may be agreed at construction stage, subject to agreement with Planning Authority.

### 3.3. Surface cultivation of Topsoil

Surface cultivation will consist of ploughing or rotovating the topsoil to a minimum depth of 450mm over shrub areas or 150mm over grass areas. Care to be taken to ensure that the subsoil is not brought to the surface. It shall then be worked to reduce the topsoil to a fine tilth. After cultivation, all debris, perennial weeds and stones over 25mm in any dimension are to be removed off site.

Final grading is to be carried out to ensure the true specified level and slope and to avoid minor ridges, dishing or other depressions where water may collect.

Unless otherwise stated, finished levels of grass and shrub planting areas will be 50mm above adjoining paving or kerbs, retaining wall copings, manhole covers etc. and levels will be arranged to give gentle falls for drainage and to avoid ponding hollows. Any area unduly compacted during the work of grading will be loosened by forking or harrowing. The use of heavy rollers to roll out mounds will not be permitted.

Unless otherwise stated, finished levels of topsoil, after settlement, to be:

1. 50mm above adjoining pavements and kerbs
2. 300mm higher for shrubs than for adjoining grass areas
3. married in with adjoining soil areas
4. all stones above 50mm diameter to be removed off site by the landscape contractor.

### 3.4. Seeding:

#### 3.4.1. Amenity Grass Areas

Fine cut areas to be sown with Coburns 'Greenlawn' Grass Seed Mixture as detailed below or equal at a rate of 40g/sq.m together with fertiliser 10:10:20 at a rate of 50g/Sq.m

15% Dwarf Perennial Ryegrass

15% Dwarf Perennial Ryegrass

20% Dwarf Perennial Ryegrass

25% Strong Creeping Red Fescue

20% Chewings Fescue

5% Browntop Bentgrass

## 4. SPECIFICATIONS FOR PLANTING OPERATIONS

### 4.1. Tree Support:

All trees in pavement tree pits shall be anchored by means of root ball guying. Rootball is anchored by a timber frame (or equivalent support system – e.g. Platipus system) located around the top surface of the rootball, which is fastened by wires (4mm galvanised cable guying wire) to 'dead man' anchors, kerbstones or timber beams located below the rootball.

### 4.2. Stakes:

Round stakes shall be of peeled larch, pine or Douglas fir, preserved with a water-borne copper chrome arsenic composition in accordance with I.S. 131. All trees to be double staked with crossbar 100x25mm securely attached to uprights with galvanised nails. Stakes shall be round, 1.8m long, 75mm in diameter. Stakes shall be pointed at the butt end. Set stakes vertically in the pit and drive before planting. Drive stake with a wooden maul or cast-iron headed drive. Sledgehammer should not be used. Stakes shall be driven into the excavated planting pit to a depth of 1000mm.

### 4.3. Tree ties:

Tree ties shall be of rubber, PVC or proprietary fabric laminate composition and shall be strong and durable enough to hold the tree securely in all weather conditions for a period of three years. They shall be flexible enough to allow proper tightening of the tie. Ties shall be min. 25mm wide for 120cms – 150cm height trees and min. 38mm for larger sizes. They shall be fitted with a simple collar spacer to prevent chafing. Two ties per tree shall be applied to standards; for staked transplants, one tie per tree is required.

### 4.4. Protection:

The interval between the lifting of stock at the heeling-in area and planting on site is to be kept to an absolute minimum. Plants shall be protected from drying out and from damage in transport. All stock awaiting planting on site shall be stored in a sheltered place **protected from the wind and frost and from drying out.**

All transplants shall be wrapped in polythene from the time of lifting to conserve moisture. Except when heeled-in, they shall be protected in polythene at all times until planted into their final position on site.

### 4.5. Damage:

On completion of planting any broken branches shall be pruned, areas of damaged bark neatly pared back to sound tissue.

### 4.6. Watering / Fertilisers:

All trees and shrubs shall be soaked in water for one hour prior to planting. Fertilisers shall conform to BS 5581: 1981. Fertiliser must be mixed through and incorporated into the base of the planting hole and covered with soil in order to avoid roots of plants coming in direct contact. Follow manufacturer's instructions for all chemical products.

### 4.7. Tree planting:

Trees shall be planted at the same depth as in the nursery, indicated by the soil mark on the stem of the tree. They shall be planted in the centre of the planting pit and planted upright. Stones or other rubbish over 75mm shall be removed. Supply



and install the staking / guying system as per clauses 4.1-4.4. Backfill planting hole with excavated topsoil, and remove all stones and debris, firming plant into position. Upon completion of planting, all pits shall be raked over lightly to leave an even surface and neat appearance. All stones greater than 25mm dia. to be removed. Provision should be made for the watering of root-balled trees in the first year following planting.

#### **4.8. Specimen Trees**

Excavate tree pits to 1200mm x 1200mm x 1000mm deep. Farmyard manure 80mm deep and 100g of 0.10.20 shall be applied to each tree pit prior to planting. Farmyard manure shall consist predominantly of faecal matter and shall be free of loose, dry straw and undigested hay. It shall be free of surplus liquid effluent. Install tree support system as per clause 4.1. Fill planting hole with topsoil as per clause 3.2.2, and remove all stones and debris, firming plant into position.

##### **4.8.1. Small Trees / Large Shrubs**

Excavate tree pits to 750mm x 750mm x 750mm deep. Farmyard manure 60mm deep and 100g of 0.10.20 shall be applied to each tree pit prior to planting. Farmyard manure shall consist predominantly of faecal matter and shall be free of loose, dry straw and undigested hay. It shall be free of surplus liquid effluent. Install tree support system as per clause 4.1. Fill planting hole with topsoil as per clause 3.2.2, and remove all stones and debris, firming plant into position.

#### **4.9. Container Grown Shrubs, Grasses, Ferns, Perennials P9 / 20-30 / 30-40cm**

Excavate planting hole to a depth of 300mm x 300mm x 300mm deep; the base to be broken to a depth of 50mm and glazed sides roughened. Apply FYM to base of hole to a depth of 150mm and 30g of 0:10:20 per planting pit. Backfill planting hole with excavated topsoil, and remove all stones and debris, firming plant into position.

#### **4.10. Containerised Shrubs, 40-60cm**

Excavate planting hole to a depth of 500mm x 500mm x 500mm deep; the base to be broken to a depth of 50mm and glazed sides roughened. Apply FYM to base of hole to a depth of 150mm and 50g of 0:10:20 per planting pit. Backfill planting hole with excavated topsoil, and remove all stones and debris, firming plant into position.

#### **4.11. Hedging 25-30cm, 40-60cm**

Excavate trench to a depth of 300mm x 300mm wide; the base to be broken to a depth of 50mm and glazed sides roughened. Incorporate 200mm depth of well-rotted FYM into base and cover with 150mm soil min. Apply 100g 0:10:20 per metre into backfill. Backfill planting hole with excavated topsoil, and remove all stones and debris, firming plants into position.

#### **4.12. Hedging 90-120cm**

Excavate trench to a depth of 500mm x 500mm wide; the base to be broken to a depth of 50mm and glazed sides roughened. Incorporate 200mm depth of well-rotted FYM into base and cover with 150mm soil min. Apply 100g 0:10:20 per Sq.m into backfill. Backfill planting hole with excavated topsoil, and remove all stones and debris, firming plants into position.

#### **4.13. Bulb and Corm Planting**

Bulbs to be planted in single species drifts of 100-300no. bulbs. Excavate hole wide and deep enough for the bulbs. Bulbs to be planted at a depth three times longer than the bulb, measured from base to tip. Place the bulbs in the hole with the

shoot facing upwards, spaced at least twice the bulb's own width apart. Replace the soil and gently firm with the back of a rake. Avoid treading on the soil following planting as this can damage the bulbs.

#### **4.14. Aquatic Plants**

Any aquatic plants are to be planted into the topsoil in accordance with specifications above for container-grown plants, excluding fertiliser. Following planting, the rootzone must be saturated and the area is to be flooded with water and kept topped up to at least 50mm depth at all times, including in the establishment period.

#### **4.15. Ground finish:**

Upon completion of planting, all ground finish shall include for the removal of stones greater than 25mm excavated during the course of the digging for planting purposes. All soil surfaces should be even and free of mounds, rutting or hollows.

#### **4.16. Spraying:**

Following planting, weed free circles to be formed around individual plants, as directed, using an approved broad-spectrum contact herbicide, as approved by the Employer's representative, in mid-spring following planting. Herbicide to be applied using controlled drop applicator. The contractor shall be responsible for keeping the ground (1m diameter circle) around all planted material weed free by means of herbicidal application, using approved sprays, during the course of the contract. Weeds to be removed include grasses, broad-leaved annual and perennial weeds and all noxious weeds.

#### **4.17. Weed control fabric**

The weed control fabric shall be 105gsm and shall suppress weeds whilst allowing water, air and nutrients to pass through. Mypex™, Plantex<sup>R</sup> or equal woven fabric product acceptable. Cut with a scissors or knife. All sharp objects should be removed from the surface soil prior to laying the weed suppressing geotextile. Overlap adjacent rolls by at least 10cm. Membrane to be pegged to ground using proprietary plastic pegs.

When planting into the geotextile membrane an 'X' shaped notch should be cut into the membrane for each individual plant, to allow for excavation. Planting should resume as per species specification. Excavated material should not be stored on geotextile and the membrane area should be thoroughly swept of any residual material prior to application of finished aggregate or mulch.

Membrane to be applied to all planting and gravel areas.

#### **4.18. Bark mulch**

Bark Mulch to be 'Golden Pine Bark' by Growise or equal and approved. The product shall consist of matured Conifer Bark with an even nominal particle size distribution of 5-75mm with less than 5% dust and fines and less than 15% wood content. The pH to be between 4.5 and 5.5. The product shall be pest, disease and weed free and not have been treated with Methyl Bromide or any additives. The product shall have been tested in accordance with the requirements of BS 4790:1987, for fire resistance.

The natural heat treatment maturing process shall have been sufficient to ensure that excess volatile substances are driven from the product. During the process, temperatures within the product heaps must exceed 50°C for a minimum 14 day period, followed by a further period of stabilisation.

Lay Bark Mulch to a finished depth of 75mm allowing at least 10% for settlement after 30 days. All such mulch of good quality from an approved source will be inspected by the Employer's representative prior to delivery. All product volumes to be calculated using The Bulk Density method, as set out in BS EN 12579:2000 and BS EN 12580:2000. Slow release Nitrogen fertiliser to be applied to soil prior to mulching.