

**Estates
Grounds Maintenance**

Soft Landscaping Specification



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Document: **Soft landscaping Specification**

Produced by: **Grounds Maintenance**

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Soft Landscaping Specification

1.0 General Information and Guidelines

1.1 Scope of the document:

This document sets out the University's requirements for soft landscaping and is the default specification in the absence of a site specific landscaping specification. This document is the framework for developing site specific landscaping specifications for University projects. See also the Estates Design Guidance notes.

The document is the specification for all reinstatement works where construction work has resulted in damage to the existing plantings, lawns, or other external area within the University grounds; and where Grounds Maintenance give authorisation for dig permits it is on the understanding that the project will reinstate damage to soft landscaping in accordance with this document.

1.2 Permits to Dig:

All works and installations which require excavation or ground penetration (e.g. stake driving) to a depth greater than 150mm require a University Permit to Dig, which requires a minimum five working days' notice. <http://www.reading.ac.uk/buildingmaintenance/OurPoliciesandProcedures/bmaint-policies-and-procedures.aspx>

1.3 Site Rules:

The University's site rules are set out in Safety Code of Practice 51 'Site Rules for working on University Premises'. <https://www.reading.ac.uk/health-safety-services/-/media/project/functions/health-and-safety-services/documents/cop-51-site-rules-for-working-on-university-premises-sept-2020.pdf?la=en&hash=0BA5117BCFEDOCA3DB90C410F6A9F6D3>

1.4 Points of Contact:

- 1) Head of Grounds Maintenance (HofGM): Rupert Taylor r.taylor@reading.ac.uk
- 2) The Deputy Head of Grounds Maintenance: Lucy Jellis l.j.jellis@reading.ac.uk

2.0 Liaison and Timing of Communication:

Key objectives & considerations:

- **At appointment engagement with HofGM essential**
- **HofGM to be given 15 working days to review design information before stakeholder sign off**
- **Suitable notice of landscaping operations (As 2.4) to be given to Grounds Maintenance**

2.1 Feasibility and Planning:

The HofGM to be consulted at feasibility stage to ensure that consideration is given to existing trees and landscaping. Any damage to retained landscaping or subsequent remedial works needed due to restricted access associated with project activities will be rectified at cost to the project before hand back to Grounds Maintenance.

2.2 Detailed and technical design:

Following the development of detailed plans the HofGM should be consulted to ensure that appropriate landscaping is planned with special consideration given to suitable species selection, ease of maintenance and site safety. The project will be responsible for ensuring that the finished landscaping can be maintained in a safe manner in accordance with the CDM regulations. Banks swales and slopes must be designed in order that they can be cut with ride on machinery and will be graded to a maximum slope of 15° to the horizontal or less. Engineering solutions including retaining walls or terracing or no maintenance solutions will be used to manage the risk of severe slopes.

2.3 Pre-contract:

The project team shall liaise with, and seek the agreement of, the HofGM on the design and implementation of the following:

- Contractor access
- Location and extent of contractor's site compound
- Suitability of top soil retention for new landscaping and soil storage
- Tree protection and tree retention

The project must receive written confirmation from the HofGM

2.4 In-contract:

The contractor should give a minimum of 3 working days' notice to the HofGM:

- before placement of top or sub soil or soil stripping
- before commencement of planting
- before grass seeding or laying turf
- before any works within tree root protection areas (RPA's) or removal of protective fencing
- give notice before site works recommence following adverse weather conditions or heavy rainfall (e.g. >10mm in 24 hours)

2.5 On site investigation:

When Grounds Maintenance have reason to suspect that landscape works are not being, or have not been, undertaken in accordance with the specification, a request for investigative work shall be made through the University's Project Manager (PM). The PM will direct the Contractor to carry out any necessary investigation work in the presence of the HofGM. The cost of such testing (e.g. digging a trial hole, Leaf Chlorophyll fluorescence) will be borne by the Contractor if in breach of the specification. Grounds Maintenance would encourage regular communication and engagement to avoid the need for such investigations.

3.0 Soil

Key objectives & considerations:

- **Notice of onsite operations must be given (as 2.4)**
- **Correct handling, installation and preparation of top soil is vital to the success of the landscaping scheme**
- **The retention or protection of existing soil on site is preferable to importing manufactured soil**
- **The protection of the site from excessive compaction is preferable to carrying out remedial works**

3.1 Reference:

BS 3882: 2015 Specification for Top Soil

3.2 Definitions:

Top soil: Top layer of soil, darker in colour and with more organic matter than the layer below or manufactured to equivalent properties, the top 250-300mm.

Sub-soil: Soil layer extending between the top soil and the little weathered parent material below.

3.3 **Stripping and retention of top soil:**

Tracked machinery to be used with access routes planned and suitably protected to minimize soil compaction

Top soil should not be stripped, handled or trafficked:

- in a waterlogged condition
- when the ground is frozen or covered by snow
- when there are pools of water on the ground surface

If sustained heavy rainfall (>10mm in 24 hours) occurs during stripping operations then the work must be suspended until the ground has had at least 24 hours to drain or has reached a suitable moisture content. To be agreed on site by the principle designer with consultation with the HofGM.

3.4 **Soil Storage:**

Retained top soil (free of subsoil, pernicious weeds, demolition or construction rubbish, roots or other contaminants) should be loose tipped in linear heaps on to the agreed & prepared storage site, ensuring the heaps do not exceed 1.5m in height and 3m in width. Heap sides should be shaped to allow run off but should not exceed 30°.

Weed control to be carried out at monthly intervals to prevent the establishment of pernicious weeds using a translocated non residual herbicide (following consultation with HofGM). If the soil is to be stored in excess of 6 months the heaps should be protected from erosion by covering. The heaps will not be used for any other type of storage and no construction plant will drive over them.

3.5 **Sub-soil grading:**

Grade sub-soil to smooth flowing contours to achieve finished levels of topsoil no greater than 300mm. Areas of thicker sub-soil to be excavated and removed as required to ensure a depth of cover appropriate to the area (150-300mm). Should subsoil need to be imported to make up any deficiency it should be supplied with reference to section 3.7 and BS3882:2015. Site to be scarified with reference to 3.6 before spreading of sub soil. Material should be placed in layers no greater than 150mm before consolidating.

Minimum depths of subsoil over parent material or artificial structures:

Tree planting 1000mm

Shrub planting, grass areas 700mm

3.6 **Sub-soil decompaction and preparation:**

Sub soil cultivation is likely to be detrimental if carried out during wet conditions.

Principle designer to carry out on site assessment with consultation with the HofGM.

Underground services, site conditions, time of year and nature of the sub soil will determine works.

As a minimum compacted sub soils to be lightly scarified to a depth of 150mm in preparation for top soil

On open sites free of the constraints of underground services and hard landscaping:

Loosening to be carried out with a tracked tractor using a suitable winged ripping tine to the depths described below:

- Light and non-cohesive subsoils: When ground conditions are suitable, loosen thoroughly to a depth of 300 mm.
- Stiff clay and cohesive subsoils: When ground conditions are suitable, loosen thoroughly to a depth of 450 mm.
- Rock and chalk subgrades: Lightly scarify to promote free drainage.

Site works to be carried out in a planned and systematic fashion ensuring areas are not excessively tracked.

Stones: Immediately before spreading topsoil, remove surface stones or other debris larger than 100 mm in any direction, contaminants, areas of denatured or waterlogged soil and any other debris or builders rubble. On completion inform the HofGM for inspection.

3.7 **Top soil supply:**

Soil classification – Multi-purpose imported material as required to make-up any deficiency to specified works. Soil analysis should comply with BS3382 2015 and be within Ph6-7 range. Material should be free from sub-soil, debris or any contaminant that is hazardous to human or animal life or detrimental for plant growth. A representative sample should be sent to the principle designer and HofGM for approval before being brought to site.

3.8 **Top soil spreading:**

Only after approval from the HofGM can top soil be spread. This must be carried out in a planned and systematic way to ensure the prepared sub-soil does not become compacted. Top soil must be handled with reference to section 3.3. Top soil to be loose tipped with a minimum of handling to ensure correct depths and levels. The soil should be lightly worked and consolidated using tracked equipment but NOT compacted in 100-150mm layers as appropriate to required depth.

The site will be allowed to settle for four weeks before planting operations begin or as agreed on site by the principle designer with consultation with the HofGM, at which time deficiencies in depths or levels should be addressed. During this fallow period weed control using a translocated non residual herbicide (following consultation with HofGM) or cultural methods are to be carried out if required. The area must be protected from all construction activity which could result in compaction or contamination.

3.9 **Top Soil depths over prepared sub soil:**

In accordance with approved landscaping plan or
Grass areas minimum 200mm maximum 300mm
Shrub beds and tree pits minimum 300mm maximum 400mm
Design of chambers or kerb haunching need to take this into account

3.10 **Preparation of undisturbed ground:**

Existing woody vegetation: Cut to ground level existing planting, shrubby material roots removed using tracked equipment and suitable bucket such as power rake or riddle bucket Stumps to be ground to 350mm below ground level and arisings removed from site. Visible roots and large stones with a diameter greater than 50 mm removed from site on completion. In suitable conditions cultivate site (Depth and method as appropriate to replacement planting) ensuring sub-soil is not brought to the surface. Fallow period (minimum) one month before further works.

Existing turf or thick sward: Apply a translocated non residual herbicide (following consultation with HofGM) after total kill achieved (2-3 weeks) in suitable conditions cultivate site (Depth and method as appropriate to replacement planting) ensuring sub-soil is not brought to the surface. Fallow period (minimum) one month before further works.

Remove visible roots and large stones (with a diameter greater than 50 mm), plough or dig over to the full depth of topsoil, ensuring sub-soil is not brought to the surface. Fallow period (minimum) one month before further works.

4.0 **Composts, mulches & other bulk soil ameliorants**

Key objectives & considerations:

- **Notice of source of product**
- **Statement of analysis**
- **Representative sample required before bringing to site**

4.1 Green waste composts supply: Imported sanitized green waste and stabilized composts should be manufactured in accordance with PAS 100. Submit representative sample to the principle designer and HofGM for approval, together with declaration of analysis. To be used as soil improver and mulch where appropriate.

4.1.1 Application rates as soil improver: General planting: compost applied at the rate of 7.5m³/100 m² to achieve an even distribution of 75mm depth over planting area. Incorporate into the top 200mm of the top soil using rotary cultivator, or by hand, before soft landscaping works.

4.2 Peat: Peat must not be used.

- 4.3 Sand:** Horticultural washed sand for lawn top dressing or improving drainage within planting areas. Application rates as required. Particle size of between 0-4mm. Material should be free from pests, disease, fungus, weeds or any contaminant that is hazardous to human or animal life or detrimental for plant growth. Confirm source and analysis to HofGM before bringing to site.
- 4.4. Bark Mulches:** For mulching new tree or shrub planting medium grade ornamental bark mulch particle size 0-30mm, wood content <20%. Dust and fines minimum, durability 1-2 years, FSC certified, free from pests disease fungus weeds or any contaminant that is hazardous to human or animal life or detrimental for plant growth

5.0 Lawn establishment

Key objectives & considerations:

- **Turf is the preferred method of lawn establishment**
- **Lawn areas must be designed to avoid creating inaccessible areas or areas that require large areas of hand cutting**
- **Turf laying or grass seeding should not commence unless the preparations have been approved by HofGM**
- **New lawn areas remain the responsibility of the contractor until hand over has been confirmed in writing from the HofGM**

5.1 Timing:

Carry out work while soil and conditions are suitable with reference to section 3.3. Seeding and turf laying to be carried out between September-October and March-April. Grass sward establishment is possible at other times of year but will be reliant on irrigation or suitable weather windows. The contractor will be responsible for supplying adequate irrigation until establishment or agreed point of handover

5.2 Seed and turf products:

General purpose amenity grass seed: Rigby Taylor mix R6 or product of equal quality approved by HofGM. Contractor to supply evidence i.e. receipt or delivery note from supplier. General purpose amenity turf: Rolawn Medallion turf or product of equal quality approved by HofGM. Supply declaration that the turf has been grown from suitable turfgrass cultivars on a loam based soil type. Turf containing mesh or "turf net" is not acceptable.

Principle designer to make recommendations for suitable seed mix for problem areas such as slopes (Low maintenance), shady areas or areas prone to flooding.

5.3 Lawn establishment using seed:

5.3.1 Initial preparation:

In accordance with section 3.5-3.9 minimum top soil depth 200mm (maximum 300mm). All banks, verges and landscape features laid to grass must be capable of being cut by ride-on machinery. These areas must, therefore, be graded to a maximum slope of 15° to the horizontal or less.

5.3.2 Consolidation:

Lightly consolidate with a light "Cambridge" (Ribbed) type roller or, for smaller areas, by walking with the operatives putting their weight onto their heels and walking systematically over the site in two directions. When correctly complete it should be possible to walk over the prepared site without leaving obvious foot prints.

5.3.3 Finished levels:

Following rolling any variations in levels (hollows and high spots) will be apparent and addressed by adding top soil or spreading the surface layer. Finished layers to meet the falls and levels of the surrounding grassed areas (acceptable variation +25mm to -10mm). Finished level to adjacent hard surfaces, such as drains, kerbs and paving, +25mm above hard surface.

5.3.4 Seed bed preparation:

The surface should be lightly and uniformly raked to produce a friable tilth. All surface stones 10mm+ (in any dimension) should be removed from site.

5.3.5 Seeding:

In calm conditions apply pre-approved seed at a rate of 35g per m². The calculated seed quantity should be split in two and applied at right angles to each other to ensure an even coverage. Lightly rake in to cover the seed and leave a final level surface. Larger areas can be sown using a suitable seed drill i.e. one that produces a random spread, if conditions allow following consultation with the HofGM.

5.3.6 Irrigation:

Wet the top 100mm (minimum) to full depth of topsoil, ensuring even coverage without displacing seed, seedlings or soil if required. Repeat/apply as necessary to ensure even germination and establishment of all sown areas to result in a healthy, vigorous grass sward, free from the visible effects of pests, weeds and disease.

5.4 Turf establishment

5.4.1 Dimensions:

1 square metre rolls (610mmx 1640mm) or equivalent . For large scale landscape projects 'Big rolls' in a variety of dimensions considered, proposals to principle designer.

5.4.2 Health and condition

The sward to be established on a loam containing less than 40% clay as determined by particle size analysis. The soil layer beneath the thatch should be between 5 and 15 mm deep and this thickness should be uniform within a consignment of turf. The sward must be green and must not be visibly affected by any pest or disease. The turf is to be composed of the sown turfgrasses which should occupy at least 95% of each turf. The height of the sward when harvested should not exceed 35 mm. The thickness of uncompressed thatch should not exceed 10 mm. To demonstrate strength, it should be possible to lift a 1 sq. metre turf clear of the ground by their shortest side. At least 19 out of 20 turves should be able to be placed and unrolled without breaking.

5.4.3 Soil preparation for receiving turf:

Initial preparation in accordance with section 3.5-3.9 minimum top soil depth 200mm

5.4.4 Consolidation and finished levels:

Lightly consolidate with a light "Cambridge" (Ribbed) type roller, or for smaller areas by walking, with the operatives putting their weight onto their heels and walking systematically over the site in two directions. Following rolling any variations in levels should be addressed by adding top soil or spreading the surface layer. Finished layers to meet the falls and levels of the surrounding grassed areas (acceptable variation +5mm to -10mm). Finished levels with existing hard surfaces such as drains, kerbs and paving level to be 25mm above hard surface.

5.4.5 Turf bed preparation:

The surface should be lightly and uniformly raked to produce a friable tilth. All surface stones 20mm+ (in any dimension) should be removed from site. When adjoining existing lawns, a straight edge should be cut into the existing turf to ensure a seamless joint.

5.4.6 Conditions for laying turf:

Turf should be laid when the weather is suitable and soil conditions are moist. Turf should not be laid if the area is waterlogged, or when frost is in the ground. Consult with the principle designer and HofGM if unsure.

5.4.7 Delivery and stacking:

Turf to be delivered to site on the day of laying and within 24 hours of lifting. Turves to be packed to avoid drying out during transit. Turves must not be stored on site for more than 24 hours. Turves should be stacked to a maximum height of 1.4 m on cleared ground .

5.4.8 Laying:

Turves from the stack to be wheeled to the laying area over planks butted together. Adequate timber planks to be used to support persons and loaded barrows. The turves to be laid onto the prepared soil bed, working from planks set over previously laid turves, and firmed into position ensuring good contact with the soil. Turf to be laid in consecutive rows with broken joints (as in stretcher bond brickwork) closely butted and to correct levels. Turf edges and margins should be laid with whole turves. Any inequalities in finished levels should be adjusted as work progresses by raking out and/or packing fine soil under the turf. Finished turf levels: 25mm above existing hard surfaces such as drains, kerbs and paving. 10mm above existing turf allowing for final settlement.

5.4.9 Irrigation:

Irrigation to be applied as necessary to prevent turf drying and shrinkage until rooting into the under lying soil is apparent. Immediately after laying the turf the work area is to be watered using an appropriate overhead spray irrigation system if required. There should be sufficient water to soak the newly laid turf and, if necessary, the under lying soil to a depth of 75mm. The contractor will be responsible for supplying adequate irrigation until establishment or agreed point of handover.

5.4.10 On site protection:

A light weight plastic mesh type fencing 1m high, or other suitable product, set on pins at 2m intervals (but no deeper than 150mm unless permit to dig in place) should be erected around the newly laid turf and should be left in place until the turf is established.

5.5 Lawn edging:

5.5.1 After seeded areas are well established ensure edges are clean and straight or cut to smooth curves. Where they border ornamental plantings an edge, approximately 100mm-125mm deep should be created to permit edging with shears, with the mulch and soil drawn back approximately 100mm above the lawn level.

5.5.2 After completion of turf laying ensure edges are clean and straight or cut to smooth curves around. Where they border ornamental plantings an edge, approximately 100mm-125mm deep, should be created to permit edging with shears, with the mulch and soil drawn back approximately 100mm above the lawn level.

5.6 Completion of works:

Ensure all arisings (Soil, turf, stones or other debris) are removed from site. Leave the works in a clean tidy safe condition.

5.7 Initial cut of new turf areas

General: The contractor will carry out the first cut when the grass is established to 75 mm high and before presenting for hand over. During an agreed period of maintenance a grass height of between 25 and 75mm will be maintained. Mowing equipment must not mark or cause rutting to the surface. Established by seed: Before cutting, all stones above 25 mm in any dimension to be handpicked and the area and during suitable conditions crossed with a light weight roller to firm the grass and consolidate the surface. The area will be topped with a rotary mower so as to leave 40 mm of growth. The grass cutting machinery should be sharp and in good condition to avoid pulling out young seedlings. All arisings should be collected and disposed of off-site.

5.8 Failures and rectification:

At handover seeded and turfed areas will form a close knit, continuous ground cover of even density, height and colour, with vigorous and healthy growth out competing weed growth. Those areas which do not meet the specification will be classified by the HofGM as replacement or remediation

5.8.1 Replacement:

Proposals to principle designer and HofGM to bring the area to the required standard through cultivation work and/or extra soil followed by seeding or turfing as appropriate and irrigation as required.

5.8.2 Remediation:

Proposals to principle designer and HofGM to bring the area to the required standard through remedial works which could include all of the following: slitting, spiking, top dressing, over seeding, watering and fertilizer application.

5.9 Meadows:

Key objectives and consideration

- Following site assessment proposals to HofGM
- All meadow areas must be accessible to cut and collect machinery

5.9.1 Site assessment and design:

Site specific meadow design to be carried out by principle designer to determine design, species selection and implementation appropriate to site
Results and proposals to HofGM for approval in writing.

5.9.2 General requirements: Use suitable translocated herbicide (notice and proposals to be given to HofGM) if existing herbage not suitable for enhancement or especially where pernicious weeds are present minimum 3 weeks before intended commencement of works. Minimal cultivation to 100mm to produce suitable seed bed using disc or power harrow. (Pedestrian rotary cultivator in smaller areas).

5.9.3 Specific soil requirements:

Undisturbed soils deemed appropriate for agreed species mix prepare as 5.9.4.
Undisturbed soils that require low nutrient soils Top soil stripped from site (150-250mm as determined in proposals) or deep ploughing (inversion ploughing) Sub soil prepared as 3.6 and 5.9.4
Sub soil or manufactured soil profile: Subsoil prepared as 3.6 if it is not possible to produce a suitable seed bed inform HofGM with proposals for bringing in inert low nutrient fill ensuring that the specified levels are achievable

5.9.4 Consolidation and finished levels:

Lightly consolidate with a light "Cambridge" (Ribbed) type roller, or for smaller areas by walking, with the operatives putting their weight onto their heels and walking systematically over the site in two directions. Following rolling any variations in levels should be addressed by adding sub soil, other pre-approved low nutrient fill or spreading the surface layer. Finished layers to meet the falls and levels of the surrounding grassed areas (acceptable variation +5mm to -10mm). Finished levels with existing hard surfaces such as drains, kerbs and paving level to be 25mm above hard surface. Where it is not possible to form a seed bed with the existing sub straight low nutrient fill (proposals and representative sample to the HofGM for approval) should be used to bring up levels and form a seed bed. The fill material should not be played in excess of 100mm

5.9.5 Seed bed preparation: The surface should be lightly and uniformly raked to produce a friable tilth. All surface stones 10mm+ (in any dimension) should be removed from site.

5.9.6 Sowing Dates:

Preferred August - September or April - May immediately after seed bed preparation.

5.9.7 Sowing rates:

In accordance with suppliers recommendations
Contractor to supply evidence i.e. receipt or delivery note from supplier of specified seed mix

5.9.8 First year maintenance:

If growth exceeds 100mm cut at 75mm with flail or rotary mower and remove arisings repeat if sward height exceeds 200mm. Carry out weed control of pernicious weeds such as Nettles (*Urtica* sp.) and Doc leaves (*Rumex* sp.)

5.9.9 Preparation for hand over:

Appropriate maintenance (as 5.9.8) dependent on time of handover. Carry out over planting using plug plants of agreed species to make good areas of poor cover > 300mm x 300mm

6.0 Minor Works within Landscaped Areas

Key objectives & considerations:

- **The need for repairs can be significantly reduced with careful planning and ground protection measures**
- **Early engagement with HofGM essential**

6.1 Service trenches within lawns:

- 6.1.1** Consult with HofGM with regards to turf retention. Turf must be re-laid within 48 hours (October-March is a viable time)
- 6.1.2** Turf to be retained to be cut using a turf cutter (25mm thickness) and cut in to manageable pieces 1-1.2m long and rolled. The retained turfs are to be covered with hessian or plastic sheeting to prevent drying.
- 6.1.2** Trench excavated using ground protection e.g. Plastic track mats required to prevent damage to adjacent lawn.
- 6.1.3** Spoil to be placed on protective sheeting or boards with sub and top soil kept separate
- 6.1.4** On completion of installation back-fill with sub-soil first but allow for 200-300mm of top soil cover. Ensure service run is adequately consolidated to prevent subsequent subsidence before placement of the top soil. Top soil consolidated in layers no greater than 150mm by walking, the operatives putting their weight onto their heels and walking systematically over the site.
- 6.1.5.** Finished layers to meet the falls and levels of the surrounding grassed areas (to be +25mm for seed, level for turf). Finished levels to existing hard surfaces such as drains, kerbs and paving +25mm.
- 6.1.6** The surface should be lightly and uniformly raked to produce a friable tilth. All surface stones 10mm+ (in any dimension) to be removed from site.
- 6.1.7** Replace turf, ensuring any gaps are filled with stone free soil or in calm conditions, apply an over seeding with pre-approved seed at a rate of 15-25g per m² and lightly rake in to cover the seed and leave a final level surface.
- 6.1.8** Remove all arisings from site leaving it in a clean and safe condition.

6.2 Service trenches within existing landscaping or within the vicinity of trees

- 6.2.1** Consult with HofGM with regards to planting retention and tree protection.
- 6.2.2** Trench excavated using hand digging methods and ground protection as required around retained planting and tree to prevent damage to roots. Where hand digging is specified no roots > 15mm diameter are to be severed.
- 6.2.3** Spoil to be placed on protective sheeting or boards with sub and top soil kept separate.
- 6.2.4** On completion of installation back fill with sub-soil (where tree roots have been retained carefully pack soil around) but allowing for 200-300mm of top soil cover. Ensure service run adequately consolidated to prevent subsequent subsidence before placement of top soil. Top soil consolidated in layers no greater than 150mm by walking; the operatives putting their weight onto their heels and walking systematically over the site.
- 6.2.5.** Finished level to meet the falls and levels of the surrounding areas. Finished level with existing hard surfaces such as drains, kerbs and paving level
- 6.2.6** The surface should be lightly and uniformly cultivated to produce a friable tilth all surface stones 25mm+ (in any dimension) to be removed from site.
- 6.2.7** Replace existing plants as agreed with reference to section 7.

- 6.2.8 As far as reasonably practicable match existing mulching material.
- 6.2.9 Remove all arisings from site leaving it in a clean and safe condition.
- 6.2.10 Make good any deficiencies in levels or sward cover after 3 months

7.0 Amenity Planting

Key objectives & considerations:

- **Beds must be presented to the principle designer and HofGM for inspection before planting begins**
- **Plants must be presented to the principle designer and HofGM for inspection before planting begins**
- **Success is dependent on good plant handling, planting and aftercare**

7.1 Soil preparation for shrub/ornamental planting areas:

Prepare soil as specified in sections 3.5-3.10 appropriate to the site. Ensure that all visible roots and large stones with a diameter greater than 50 mm are removed. Spread sanitized imported green waste and stabilized composts at 7.5m³/100 m² (75mm depth over planting area). Incorporate into the top 200mm of the soil using a rotary cultivator or by manual means.

7.1.2. Finished levels:

Level to existing hard surfaces such as drains, kerbs and paving. Level to lawn edges 100mm -125mm above (including mulch coverage) with an edge strip.

7.1.3 Surface finish:

The surface should be lightly and uniformly cultivated to produce a friable tilth. All surface stones 50mm+ (in any dimension) to be removed from site.

7.2 Soil Conditions before planting:

Soil conditions should be moist & friable, NOT waterlogged, frozen or snow covered.

7.3 Climatic conditions:

No planting to be carried out in extremes of temperature <3°C or > 24°C (without consultation with the HofGM and provision for irrigation). If the water supply is, or is likely to be, restricted by emergency legislation then planting should be suspended. Planting in periods of forecast high wind, especially in low or high temperature, must be avoided.

7.4 Times of year for planting:

Container grown deciduous shrubs: Late October to late March.

Container grown evergreens: September/ October or April/ May.

Container grown plants can be planted at other times, but only after consultation with the HofGM and only if adequate irrigation can be provided.

7.5 Supply of shrubs and plants:

Shrubs: container grown stock only Deciduous Hedges: Bare root material acceptable.

The contractor will ensure that, on delivery to site, plants will have the following attributes:

- As Specified: Correct size, form, species or cultivar
- Condition: Materially undamaged, sturdy, healthy and vigorous.
- Appearance: Of good shape and without elongated shoots.
- Hardiness: Grown in a suitable environment and hardened off.
- Health: Free from pests, diseases, discoloration, weeds and physiological disorders.
- Budded or grafted plants: Bottom worked.
- Species: Labelled with full botanical name, true to type as specified, substitution will be allowed only after the written approval from the HofGM
- Provenance: Grown on a UK nursery for at least 12 months.

Principle designer to approve nursery stock before planting begins with consultation with HofGM.

7.6 Plant handling, storage and transport

Plants to be handled and dispatched in accordance with the National Plant Specification - Handling and establishment with special reference to the following:

- Frost: Protect bare root plants and frost susceptible plants.
- Handling: Handle plants with care. Protect from mechanical damage and do not subject to shock, e.g. by dropping from a vehicle.
- Plant packaging: Bare root material to be sealed in co-extruded black and white polyethylene bags.
- Handling of bulk quantities: Principle designer to ensure correct storage and care before planting.
- Crated plants to be unloaded within 48 hours on site.

7.7 Plant quality:

Should be in accordance with BS3936, ensuring before planting that:

- **Plant nutrition:** Plant foliage is not showing signs of chlorosis due to nutrient deficiency
- **Plants:** Centred and stable within containers
- **Root growth:** Filling containers, but not root bound, and in a condition conducive to successful transplanting.
- **Moisture:** Root ball soaked to full depth of container no signs of drought, stress or foliage scorch.
- **Hardiness:** Grown in the open for at least two months before being supplied.
- **Containers:** With holes adequate for drainage when placed on any substrate commonly used under irrigation systems.

7.8 Planting:

7.8.1 Spacing:

Place plants on the prepared ground at the specified density, ensuring an equal distance between plants.

7.8.2 Excavation of planting hole:

Excavate planting hole: hole must be wide enough to easily accommodate the root ball/ root system, ensure that the hole is the correct depth when the plant is placed in the hole:

Containerised: The top of root ball should be level with the soil surface.

Bare root: Root flare at surface of soil.

7.8.3 Planting:

Position the planting upright, with best side to the front where appropriate.

7.8.4 Backfilling:

Check planting depth before cutting the sides of the hole into the planting hole. Consolidate ensuring good soil to root ball contact.

7.8.5 Finishing:

Lightly firm soil around plants and cultivate soil surface with hand tools, without damaging roots, to a fine level tilth with no hollows. Any stones larger than 50mm, roots or other debris should be removed from the bed surface on completion

7.8.6 Watering:

Water plants immediately after planting in order to settle the plants unless soil is at field capacity.

Where the planting bed is not at field capacity, water thoroughly, to full depth of top soil without damaging or displacing plants or soil.

7.8.7 Mulching:

Carefully spread bark mulch (as specified in 4.4) or green waste compost (as specified in 4.1.), ensuring plants are not damaged or buried. Finished appearance: level with mulch flicked back from turf edges to allow maintenance. Depth of mulch minimum 75mm maximum 100mm ensuring stem collars are not buried.

7.8.8 **Finishing:**

Ensure any damaged plant material is carefully pruned to the nearest bud using sharp secateurs. Any arisings (subsoil, stones, debris, wrapping material, canes, ties, temporary labelling, rubbish or plant waste) are to be removed from site.

7.9 **Handling of bare root plant material:**

The material is to be supplied and stored in co-extruded black and white polyethylene bags and temporarily stored in a frost free area pre-planting. At planting the material should be carefully brought to site but must not be removed from the bag until ready to be placed into a prepared hole and back filled immediately.

7.10 **Hedge planting:**

Shrubs for hedges: Consistent in species, cultivar and clone to ensure a uniform hedge.

Planting: In trenches large enough to take full spread of roots. Set out plants evenly but ensure bare root material is handled in accordance with 7.9.

7.11 **Subsequent irrigation:**

First year (March-October) post planting: Ensure that full depth of top soil remains moist. Apply irrigation evenly to the site without damaging or displacing plants or soil, to ensure successful establishment and good plant health. Leaky pipes or seep hose is particularly efficient for hedge establishment or linear planting-proposals to HofGM

7.12 **Failures:**

Plant replacements, as original specification, will be supplied and planted in the next available planting window and not delayed until the end of the defects liability period. Should the contractor not provide adequate irrigation or maintenance leading to plant failure, defects liability will roll forward 12 months.

8.0 **Specimen Tree Planting**

Key objectives & considerations:

- **At appointment engagement with HofGM essential**
- **See Estates Landscape Design Guidance**
- **Container grown material required**
- **Present stock for inspection prior to planting**
- **Trees poorly handled or stored will be rejected**
- **Planting depth is critical any trees planted too deep will be rejected**

8.1 **References:**

BS 8545: 2014 - Trees: From nursery to independence in the landscape - The National Plant Specification - Handling and establishment.

8.2 **Soil conditions before planting:**

Soil conditions should be moist & friable, NOT waterlogged, frozen or snow covered.

8.3 **Climatic conditions:**

No planting to be carried out in extremes of temperature $<3^{\circ}\text{c}$ or $> 24^{\circ}\text{c}$ (without consultation with the HofGM and provision for irrigation). If the water supply is, or is likely to be, restricted by emergency legislation then planting should be suspended. Planting in periods of forecast high wind, especially in low or high temperature, must be avoided.

8.4 **Times of year for planting:**

Container grown deciduous trees from late September- mid March

Bare root and root balled deciduous trees: Mid October (as available) up to mid-March.

Container grown conifers and evergreen trees: September/ October or March/April.

Container grown trees and conifers can be planted at other times but only if adequate irrigation can be provided proposals to HofGM.

8.5 **Tree quality:**

Tree stock to be in accordance with BS3936: Nursery Stock Part 1 Trees and Shrubs and BS 8545: 2014 - Trees: From nursery to independence in the landscape.

8.6 Supply of trees

The contractor will ensure that, upon delivery to site, trees will have the following attributes:

- Condition: Materially undamaged, sturdy, healthy and vigorous.
- Appearance: A clearly defined leader, a balanced branching framework subordinate to the central leader evenly spaced along the stem, defined stem taper.
- Budded or grafted plants: Bottom worked, free from the signs of graft incompatibility e.g. disproportionate growth of stock or scion, excessive sucker growth.
- Plant nutrition: Plant foliage is not showing any signs of chlorosis due to nutrient deficiency.
- Health: Free from pests, diseases, discoloration, weeds and physiological disorders.
- Plants: Centred and stable within containers.
- Root growth: Filling containers and able to hold the compost together, but not root bound, and in a condition conducive to successful transplanting.
- Moisture: Root ball soaked to full depth of container no signs of drought stress or foliage scorch.
- Containers: Trees supplied are within Air or light pots which stimulates fibrous root growth, with holes adequate for drainage when placed on any substrate commonly used under irrigation systems.
- Hardiness: Grown in a suitable environment and hardened off.
- Species: Labelled with full botanical name, true to type as specified, substitution only after approval from the HofGM. The contractor is liable for all replacement costs if not true to type.
- Provenance: Grown on a UK nursery for at least 12 months.

Contact HofGM for inspection of stock before planning begins. Material not considered to be in an appropriate condition or standard will not be accepted.

8.7 Supply of root balled or bare root material:

Only to be considered if containerised material not available, or, if small sized, e.g. whips or transplants are specified. Use to be agreed (in writing) with HofGM

8.7.1 Root balled material:

Root balls are to be well filled with fibrous roots and cohesive natural soil, which has been carefully lifted and handled ensuring the plant remains attached to the root system. Bare root plants which have been bagged with soil, damaged through poor handling or containerised will not be accepted.

8.7.2 Bare root material Whips and transplants:

To be supplied in co-extruded black and white polyethylene bags tied and bundled in groups appropriate to the size and material. A high proportion of fibrous roots should be evident.

8.8. Plant handling, storage and transport:

Plants to be handled and dispatched in accordance with the National plant specification, with special reference to the following:

- Frost: Protect bare root plants and frost susceptible plants.
- Handling: Trees must be handled with care. Protect from mechanical damage. Do not subject to shock or drops. Ensure adequate staff levels are available to take delivery.
- Trees to be protected from falling before planting e.g. carefully lay against hedge at 45°
- Plant packaging: Bare root material to be sealed in co-extruded Black and white polyethylene bags.

8.9 Planting pits:

8.9.1 Hard landscaped areas:

Planting pits within hard landscaped areas need to be designed after evaluation of the site conditions. The pit and rooting area must be of sufficient volume to ensure successful establishment through to maturity of the chosen species. Principle designer to send proposals to the HofGM.

8.9.2 Soft landscaped areas:

The majority of tree planting takes place within the parkland setting of the University, in areas of lawn, grassland or soft landscaping plantings and therefore a more generic approach to planting pits can be taken.

8.9.3 Excavation of planting pit:

To be carried out by hand unless otherwise agreed with HofGM. The top and sub-soils are to be kept separate. Place excavated material on boards or sheeting to protect the surrounding grass if necessary. The pit width should be determined by measuring the container or root ball width, ensuring that the pit width is wide enough to provide a minimum 100mm clearance around the root ball or 1000mm x 1000mm whichever is the greater. The pit depth should be determined by measuring the height of the container or root ball to ensure that the trees root flare will be clearly visible on the soil surface when placed in the pit. The base of the pit should not be disturbed unless there are specific problems of poor drainage or soil smearing resulting from pit construction; in this situation the pit sides should be scarified using hand tools.

8.10 Planting: Poor planting is the main reason for long term instability, poor growth and ultimate death of newly planted trees. Contractor to offer the first tree planted for inspection to the principle designer before commencing with additional planting.

8.10.1 Placement within planting pit:

The trees root system should be wetted prior to planting. The tree should be positioned in the planting pit ensuring the best side is to the front, where appropriate. Any damaged branches should be removed (using sharp secateurs to an appropriate pruning point) along with any nursery ties labels or tapes before placing the tree in the pit. The root flare or root transition must be level with the host soil or surface. It may be necessary to expose the root flare by carefully removing the surface compost and fibrous roots if the tree has been put too deep in the container when in the nursery. Peel back root wrappings to ensure the correct level is achieved. When the tree is correctly positioned remove the container or other root wrappings (See 8.11.1).

8.10.2 Backfilling:

Backfill with sub-soil first (if necessary) in order to match the soil profile that surrounds the pit; the topsoil must not exceed 300mm in depth on completion. Back fill should be added gradually in layers of no more than 150mm, firming gently to eliminate air pockets. Do not excessively compact.

During backfilling, ensure the tree remains straight. The final 100mm layer should not be consolidated but should be of sufficient depth to allow for settlement and mulch. Immediately after planting, the tree pit should be saturated to field capacity. Should the turf surrounding a tree pit become compacted during planting operations this should be relieved using a garden fork to penetrate the ground to a depth of 200mm.

8.11 Tree furniture and staking:

8.11.1 Support systems:

Support systems should be installed as part of the planting stage, ensuring stakes are not driven through root balls or irrigation tubes. Double staked, equally spaced and upright. Damaged stakes should be cut cleanly at the same height. Flexible ties should be used with spacers to ensure that the tree does not make contact with the stake. The tree should be tied at approximately one third of the trees height and removed within 24 months of planting. Should underground guying systems are used with root balled material the supporting wires and wrappings can be left around the root ball but should be removed from the tree collar to ensure the correct planting depth

8.11.2 Irrigation tubes:

Such as Green Leaf Root Rain Urban or similar products approved by the HOGM should be installed in accordance with the manufacturer's specification. The irrigation tube should be placed in the prepared planting pit surrounding the entire root ball prior to backfilling.

8.12 Tree mulching:

8.12.1 Suitable materials:

Composted bark as described in section 4.4 should be used for tree mulching. Alternative materials to be approved, by the HOGM prior to use and sample provided.

8.12.2 Mulching:

Carefully spread mulch to depth of 75mm over the planting pit area (to a minimum 500mm diameter from tree base) ensuring that the mulch does not make contact with the tree stem. After applying mulch ensure it is clear 100mm diameter (hand width) from the tree stem. Do not use hand tools. Ensure irrigation tubes are not buried with mulch material.

8.13 Finishing:

Ensure all arisings from tree planting operations are removed from site.

8.14 Irrigation:

First year (March-October) post planting: Ensure that full depth of root ball remains moist (not water logged), at all times. Apply weekly irrigation of approximately 50l via irrigation tube **and top of root ball**. The quantity of water at each visit will depend on the size of tree and ambient temperature but will be sufficient to ensure the root ball remains moist, tree foliage remains turgid with no evidence of scorch or defoliation to ensure successful establishment and good plant health.

8.15 Failures:

Tree replacements as original specification will be supplied and planted in the next available planting window or as agreed with the HofGM

9.0 Whip or transplant planting

Key objectives & considerations:

- **Early engagement with HofGM required to ensure suitable species selection for site**
- **New planting should not negatively impact on existing trees especially veterans or other habitats**
- **Trees poorly handled are likely to be dead before planting**

9.1 Tree stock:

Tree stock to be within accordance with BS3936: Nursery Stock Part 1 trees and shrubs with fibrous root system evident.

9.1.1 Tree Provenance:

Native tree species FC provenance zone 405 where available

9.1.2 Stock size and age:

Typically 1+1 40-60cm

9.2 Timing:

As sections 8.3 & 8.4

9.3 Handling and storage prior to planting:

As section 8.8.

9.4 Soil Conditions before planting:

Soil conditions should be moist & friable, NOT waterlogged, frozen or snow covered.

9.5 Spacing:

Approximately 2m in either direction, or as specified. Positioned in straight lines edges of planting to be irregular to produce scalloped edges to maximise habitat value

9.6 Site preparation:

Surface vegetation clearance: Clear an area one metre diameter around each planting station.

9.7 Planting hole:

Excavate by hand. The hole should be large enough to easily accommodate the root system. Consult with HofGM with alternative proposals if soil conditions are appropriate e.g. Mechanical auger.

9.8 Planting:

Ensure tree roots are moist and remain in the planting bag at all times until placed in the hole and immediately back filled. Position tree in hole and “cut” the surrounding soil using a spade. Back fill the excavated material. The root flare or root transition must be level with the host soil after backfilling and gently consolidating.

9.9 Mulching:

Composted bark, as described in section 4.4. Alternative materials must be approved, by the HOGM prior to use and a sample provided. Carefully spread mulch to depth of 75mm over the planting area or a minimum 500mm diameter from tree base ensuring mulch does not make contact with the tree stem. After applying mulch clear 100mm diameter (hand width) from the tree stem by hand do not use hand tools.

9.10 Tree shelters, spirals or mesh cages:

Preferred products: Tubex shrub tube 0.75 cm 130-160mm diameter secured with single wooden stake 90cm 32mm x 32mm Tubex tree shelter 1.20m 80-110mm diameter with single wooden stake 1.35m, 32mm x 32mm. Submit proposals to HofGM for alternative products round shelters only will be considered. Carefully positioned over mulched transplant ensuring branches are not damaged secure shelter with two cable ties to driven wooden stake. Stake to support full length of shelter but below shelter lip. Shelter to be upright and undistorted

9.11 Failures:

Tree replacements as original specification will be supplied and planted in the next available planting window or as agreed with the HofGM

10. Swales ditches and other open drainage schemes

10.1 Design:

Supply design, management objectives and maintenance requirement to HofGM for assessment and sign off. Ensure maintenance possible by mechanical cutting and does not restrict the access of existing landscape. Give notice to HofGM when earth works are complete.

10.2 Seed bed preparation:

The surface should be lightly and uniformly raked to produce a friable tilth. All surface stones 20mm+ (in any dimension) should be removed from site.

10.3 Sowing Dates:

Preferred August September or April May immediately after seed bed preparation to minimise erosion and capping.

10.4 Sowing rates:

In accordance with suppliers recommendations
Contractor to supply evidence i.e. receipt or delivery note from supplier of specified seed mix

10.5 First year maintenance:

If growth exceeds 100mm cut at 75mm with flail or rotary mower and remove arisings.
Second cut if sward height exceeds 200mm and remove arisings.
Carry out weed control of pernicious weeds such as Nettles (*Urtica* sp.) and Doc leaves (*Rumex* sp.)

10.5 Preparation for hand over:

Appropriate maintenance (as 10.5) dependent on time of handover. Carry out over planting using plug plants of agreed species to make good areas of poor cover > 300mm x 300mm

11.0 Maintenance

Key objectives & considerations:

- **Maintenance specification to be out put driven and agreed with HofGM**
- **Maintenance to be carried out in accordance with the agreed specification relevant to the project area and the general notes below**
- **Regular maintenance visits to consistently achieve the specification are required**

11.1 Duration:

Carry out the operations in clauses 11.2-11.3.7 until handover.

11.2 Failures of planting and rectifications:

Defects are defined as materials or workmanship which are not in accordance with the contract which could result in plants/ trees/ shrubs that fail to thrive. The project will need to replace damaged plants or materials damaged from theft or malicious damage after completion.

Replacements: Should match the size of adjacent or nearby plants and be of the same type or match the original specification, whichever is the greater. Timing of making good: next suitable planting season (See 7.4) or by agreement with the HofGM.

11.3 Landscaping maintenance general requirements:

11.3.1 Weed control:

Maintain weed free area around each tree and shrub. Diameter (minimum): The larger of 1m or the surface of original planting pit. Keep planting beds clear of weeds by hand, hoeing or chemical control (RAMS and COSHH information to HofGM)

11.3.2 Lawn maintenance:

Grass length to be kept between 25mm-75mm, between cut with appropriate equipment for the site. Cut round all obstructions. Border edges to be in a neat cut condition with edges as described in 5.5

11.3.3 Young tree maintenance:

Staking: Check condition of stakes, ties, guys and guards replace broken or missing items. Adjust ties to accommodate growth and prevent rubbing. Gently firm loosened soil around trees/ shrubs. Straighten leaning trees/ shrubs. Frequency of checks: At each scheduled maintenance visit.

Precautions: Ensure that trees and shrubs are not damaged by weed control or grass cutting operations.

11.3.4 Mulch:

Top up mulch levels (using matching material) surrounding trees and within beds to 75mm at the end of the maintenance period, with reference to previous mulch notes.

11.3.5 Irrigation:

Regular watering to ensure the top soil remains moist surrounding the planting(s).

Note: Tree pits will normally require irrigation to the pit surface as well as irrigation tube.

11.3.6 Pruning:

Dead, damaged, diseased wood and suckers should be removed using sharp secateurs.

11.3.7 Site clearance:

Leave the works in a clean, tidy and safe condition after any maintenance operations. Remove all arisings from site.

12.00 On site construction monitoring and specification compliance

Key objectives & considerations:

- **Stake holder engagement**
- **Principle designer to monitor in contract works, ensure issues are addressed in a timely manner and ensure stake holders principally Grounds Maintenance are kept informed**

- 12.1 Design documentation:**
Pre development: Provide landscape plans, planting proposals, specification or other requirements giving a minimum of 15 working days for comment
During construction: Provide proposals for variations in planting or landscape design giving a minimum of 10 working days for comment
Post construction: Provide as built drawings before hand over
- 12.2 Operations**
Principle designer to monitor site operations and ensure compliance invite HofGM at stages described in this specification
- 12.3 Completion:**
Principle designer to invite HofGM for assessment and compile defects list for action by principle contractor