

<b>Client</b>	Cardiff City Council (Education)	<b>File Ref</b>	155461-STL-XX-XX-SP-L-9901- Soft Landscape Specification, Planting Methodology and Aftercare
<b>Project</b>	Fitzalan High School (Lawrenny Avenue) Pitches	<b>Date</b>	17.11.2023
<b>Status</b>	Planning	<b>Rev</b>	PL02

## 1.0 Site Preparation and Earthworks

- 1.1** All existing trees and vegetation to be retained within the site boundary shall be protected from damage by a scaffold framework comprising a vertical and horizontal framework, well braced to resist impacts, with vertical tubes spaced at a maximum interval of three metres. Onto this, weldmesh panels should be securely fixed with wire or scaffold clamps, in accordance with BS 5837 (2012). Protective fencing is to be located one metre beyond the Tree Root Protection Zone or canopy spread, whichever is the greater. Fencing to be provided for individual trees or tree groups, and the contained area is to remain completely undisturbed for the duration of the contract.
- 1.2** Generally, all earthworks shall be executed, and topsoil and subsoil in accordance with BS4428:1989 'General Landscape Operations', DEFRA Construction Code for the sustainable use of soils on construction sites (2009), BS 3882:2015 'Specification for topsoil' and BS 8545:2014 Trees: from nursery to independence in the landscape – Recommendations.' It is assumed that existing subsoil will be reused subject to testing, however if required, subsoil and topsoil shall be imported, and sampled and analysed in line with the detailed specification, including visual, physical and chemical analysis as per BS.
- 1.3** The scheme aims to avoid works within the Root Protection Area. However in general any construction within tree root zones requires approval before work commences with method statements that ensure mitigation measures are undertaken and highlighting courses of action that will reduce stress on the tree and maintain its successful health. Refer to the Arboricultural Report for Method Statements, Impact Assessments and Tree Constraints.
- 1.4** Tree crown reductions to be undertaken as required to ensure the structural stability and shape of canopies is maintained and avoid any potential hazards. Also, low overhanging branches that impede motorist / pedestrian movement or safe visibility splays are to be removed. All tree works are to be undertaken by suitably qualified arborists and in accordance with BS3998.
- 1.5** In line with BS 3882:2015 (p11), topsoil shall be spread to the following depths, with subsoil to make up the minimum overall rooting depth:

	<u>Topsoil depth</u>	<u>Subsoil depth</u>	<u>Minimum rooting depth</u>
Grass areas:	300mm	150mm	= 450mm
Planted (shrubs and perennials) areas:	300mm	300mm	= 600mm
Trees:	300mm	600mm	= 900mm
Wildflowers/Species rich grassland:	-	300mm	= 300mm

- 1.6** Subsoil to be broken and loosen to reduce bulk density in accordance to BS 8545:2014, Annexe B.
- 1.7** Ground profiles to be left with smoothly flowing contours, free from localised depressions, high spots and abrupt angles. Cultivate topsoil to produce a fine tilth and even surface free from lumps and clods. Sides of tree pits that have been smeared or smothered during excavation should be scarified. The base of the tree pits is to be domed to aid drainage, where applicable.
- 1.8** The need for ameliorants and fertilisers should only been specified following receipt of the interpretive soil analysis report, prior to soil import and spreading in accordance with the DEFRA Construction Code for the sustainable use of soils on construction sites (2009), BS 3882:2015 and BS 8545:2014.
- No fertiliser should be applied to tree pits unless deficiencies are identified by testing, and compost shall only be applied where there is an identified need due to poor soil conditions.
- 1.9** Percolation and compaction testing of soils for tree planting should be as per BS 8545:2014 in accordance with guidance provided by the soils assessment.
- 1.10** Grass land seed planting for Swales: Ideally select ground that is not highly fertile and does not have a problem with perennial weeds (especially grass weeds like couch). Good preparation is essential to success so aim to control weeds and produce a good quality seed bed before sowing. To prepare a seed bed, first remove weeds using repeated cultivation. Then plough or dig to bury the surface vegetation, harrow or rake to produce a medium tilth, and roll or tread to produce a firm surface.

**2.0 Planting Methodology (including soil specifications)**

- 2.1** Handling and transportation of all plants shall be carried out in accordance with Horticultural Trade Association's current guidance and BS 8545:2014 Trees: from nursery to independence in the landscape – Recommendations, Section 9 and Annexe E.
- 2.2** All planting operations shall be carried out in accordance with BS 8545:2014 Trees: from nursery to independence in the landscape – Recommendations Section 10 and Annexe F.
- 2.3** **Trees:** All trees shall be supplied in accordance with the plant schedules by named nurseries (all nurseries are to follow practice guidelines), as per BS8545:2014 Section 8 and Annexe D
- 2.4** Tree planting backfill shall contain:
- |       |   |   |
|-------|---|---|
| 300mm | : | Topsoil   |
| 600mm | : | Subsoil,  |
| 300mm | : | Drainage layer (angular gravel separated with a geotextile layer) if required |
- 2.5** **Underground Guying:** All semi-mature and multi-stemmed trees (over 2.5 metres in height) are to be anchored using a suitable underground anchoring kit. Aeration and perforated watering/drainage pipes with rubber/plastic bung is to be supplied for all semi mature and multi-stemmed tree stock. 1000mm diameter of bark mulch to be placed around each tree at 75mm depth.
- 2.6** **Staking:** All extra heavy standards and feathered standards to be double staked with suitable tree ties. Perforated watering/drainage pipes with rubber/plastic bung is to be supplied for all trees. 1000mm diameter of bark mulch to be placed around each tree at 75mm depth.
- 2.7** **Tree pits:** Tree pits should be excavated to the following dimensions.

Dimensions of Tree Pit in soft landscape:

Semi Mature	2000mm square minimum x 1200mm depth
Extra Heavy Standard and <u>multi-stemmed</u>	2000mm square minimum x 1200mm depth
Heavy standard trees	1400mm square minimum x 1200mm depth
Standard and large feathered trees	900mm square minimum x 1200mm depth
Feathered trees, light and half standards	600mm square minimum x 1200mm deep
Whips	450mm square minimum x 1200mm deep

- 2.8** **Root barriers:** Root barriers to be confirmed where required. Location and depth of barriers dependent on extent and type of existing and proposed services and hard landscape construction details.
- 2.9** **Transplants:** All transplants to be planted in a pit 300mm diameter x 300mm depth, to accommodate fully the outstretched spread of roots. Backfill with excavated topsoil and gently firm in place. Ensure plants are planted to level of nursery mark.

Plants to be evenly spaced and grouped in accordance with proportion of mix in small irregular blocks to give a 'natural' appearance and avoiding straight lines.

All transplants to be fitted with rabbit guards of an appropriate diameter. To be 12mm square plastic mesh tree guards, 600 mm high, in black, brown or green, fixed with soft wood stake. Guards and stakes to be monitored often, to avoid damage to plants.

- 2.10 Shrubs:** All shrubs shall be supplied in accordance with the plant schedules by approved, ideally local nurseries. Shrub pits to be excavated to allow a 75mm clearance around the edges of the root system. Sides and bottom of pits shall be loosened to relieve any compaction. Backfill for each plant to include fertiliser enhancement only following recommendations from topsoil analysis results.
- 2.11 Bark mulch** shall consist of organic bark mulch (derived from single tree species, such as Prunus and Crataegus) with an even particle size distribution between 5-35mm. The mulch is to be General Landscape Grade Bark Mulch or equal equivalent, and a representative sample of the mulch shall be supplied for approval prior to delivery to site. Mulch layer to be spread at a consistent even depth of minimum 50mm.
- 2.12 Turfing:** To be supplied to BS3969. Pre-turfing fertiliser to be applied at the recommended suppliers a rate. The turf will be laid with half lapped joints and well butted up.
- 2.13 Seeding:** Grass and wildflower seeding to be supplied to BS3969. Seed should be applied at a rate appropriate to the mix, use and location.
- 2.14 Seeding Swales grass mix:** Seed is best sown in the autumn or spring but can be sown at other times of the year if there is sufficient warmth and moisture. The seed must be surface sown and can be applied by machine or broadcast by hand. To get an even distribution, and avoid running out, divide the seed into two or more parts and sow in overlapping sections. Do not incorporate or cover the seed, but firm in with a roll, or by treading, to give good soil/seed contact.
- 2.15 Subsoil:** To be to BS8601:2013. Imported subsoil needs to be verified with a full soil certificate and approved by the Landscape Architect prior to delivery to site.
- 2.16 Topsoil:** To be to BS3882:2015. Imported topsoil needs to be verified with a full soil certificate and approved by the Landscape Architect prior to delivery to site.
- 2.17 Watering:** All tree pits and shrub beds shall be thoroughly watered prior to application of mulch and subsequently maintained in a moist condition as per BS8545: 2014 section 11.3.

Watering rates for trees and shrubs should follow guidance as stated in BS 8545:2014 Trees: from nursery to independence in the landscape – Recommendations, Annexe G.2 Irrigation

- 2.18 Optimal timings for – Landscape implementation programme:** For the duration of the construction phase of the project it is the responsibility of the Contractor to carry out the works under the required standards and good practice. The table below gives optimal timings for new landscape works. Once the construction works of the development have been completed, the responsibility of the land management will be transferred to the client, Cardiff City Council, who can appoint a landscape management company.

TASK	January	February	March	April	May	June	July	August	September	October	November	December
New planting, of trees, hedges, ornamental shrubs, rain garden shrubs												
Seeding of wildflower meadow and wetland wildflower mixes												
Seeding of amenity grassland												
Installation of hibernacula												
Installation of log piles and bug/bee hotels												
Installation of bird and bat boxes												

Table showing optimal timings for new landscape works and habitat creation.

### **3.0 Aftercare Methodology: Maintenance and Monitoring**

**3.1** The nominated company will need to adhere to the maintenance and monitoring works as set out in the project Management Plan. The plan can be reviewed on an annual basis during the establishment phase (the first five years) and every five years afterwards. Written approval would be needed by the local planning authority for any significant changes to the maintenance and monitoring plan. There is also the option of reviewing the plan should there be extraordinary factors affecting the management, such as extreme weather conditions.

#### **3.2 Pesticides**

All pesticides and herbicides must be approved by the relevant bodies and used in strict accordance with current legislation and any new legislation that is applicable.

#### **3.3 Weed Control**

The maintenance provider shall undertake the weed control necessary to keep the site, including paved areas, in a weed free condition and only approved herbicides shall be used. The maintenance provider whilst carrying out weed control will ensure any self-seeded shrubs or trees that did not form part of the original landscaping scheme are removed.

#### **3.4 Mulching**

All mulched areas shall be topped up annually to provide 50mm of cover and maintained to that level thereafter.

#### **3.5 Fertiliser**

A yearly spring application of slow release fertilizer shall be applied to all ornamental plantings.

#### **3.6 Watering**

The maintenance provider will be responsible for watering trees and shrubs as appropriate to prevent loss and maintain healthy growth within newly planted areas for a period of two years. The maintenance provider will be responsible for the provision of water for this task. Refer to watering table.

The maintenance provider will be responsible, at their own cost, for replacing trees and shrubs that have died as a result of lack of watering.

#### **3.7 Tree Pruning**

Any routine work carried out to keep trees in good health shall conform to current British and European standards. Pruning to give due regard to the potential for nesting birds - to be undertaken outside of main nesting season (i.e. between September - February). Pruning of trees shall be to maintain good form and vigour and ensure any overhanging branches are not deemed to be a health and safety risk. Dead, diseased or dying branches shall be removed. Tree stakes shall be removed from those trees no longer requiring them and ground reinstated as necessary. The following pages explain in detail the monitoring and maintenance for each planting type within the first 10 years..

**3.8 Trees - ongoing maintenance:** Routine assessment and maintenance of trees should take place during the defect period and after care until the tree the trees is self-supporting, in accordance to BS 8545:2014 Section 11 and Annexe G

#### **Actions – (0-5 years)**

Ensure ground preparation is carried out in advance of planting season, which is for deciduous trees late October to late March, conifers and evergreens September/October. Note Container grown plants can be planted at any time if ground and weather conditions are favourable. The planting site will have a soil texture and structure that will retain and release moisture and nutrients to the plants. All treatment of soft work areas to comply to BS4428 Code of Practice for general landscape operations.

After initial planting, any damaged, dead, diseased or crossing branches shall be removed. Water regularly to ensure successful establishment.

In subsequent years remove and replace any tree found to be dead, dying, diseased or affected by vandalism.

Within the early stages (2 years) of tree growth, stakes should be monitored and repaired if damaged. Loosen tree ties or remove stakes if trees have become sufficiently established. Years 4 - 5 check trees for abrasions and chaffing with tree stakes, guards and ties. Loosen tree ties or remove stakes if trees have become sufficiently established. Trees found to be rubbing against each other should have crossing limbs removed to limit the possibility of disease in the future.

Replace bark mulch around the base of trees yearly as required to ensure the base remains weed free.

Years 0 - 5, watering as required particularly during first 4 months and during hot weather and check for any signs of stress.

***Actions – (6-10 years)***

Where tree failure occurs, the tree replacement should be of a specification to match the surrounding thriving trees to ensure it blends in with the implemented scheme. Further if the species is found not to be suited for the site or prone to diseases an alternative species should be planted, but tree species should always be replaced unless it ties in with woodland thinning works.

Any tree stakes still in position should be removed.

**3.9 Wetland grass seeded areas:**

***First year management***

Growth and establishment of wild grasses may be slow initially, especially at low sowing rates (2-5g/m<sup>2</sup>). There will often be a flush of annual weeds from the soil in the first growing season. This weed growth is easily controlled by topping or mowing. Mow all plant growth (sown grasses and weeds) regularly to 40-60mm throughout the first growing season to prevent weeds smothering the slower-growing grasses. Remove cuttings if dense, more frequent and regular topping will minimise the amount of toppings produced each time so they can be left to disperse.

***Management once established (plus year one)***

In the second and subsequent years grass sowings can be managed in a number of ways which, in association with soil fertility, will determine the character of the grassland. Regular mowing or continuous grazing will produce a short turf or lawn.

The sowing can be managed as a meadow allowing the grasses to grow tall, flower and seed from May through to July/August. The grass meadow should be cut back and mowing resumed in late summer.

Grassland which is not cut or grazed each year will eventually become coarse and tussocky in character.

Wild flower seed can be added after the grasses have established and weed problems have been dealt with. The sward will need preparation for sowing into existing grass. Flower establishment will not be as good as compared with sowing the grasses and flowers together on to bare soil, as the grasses have a 'head start'.

Monitoring of silt levels in the swale (when and if required remove silt that has accumulated).

**3.10 General purpose grassed areas:**

***Actions – (0-10 years)***

Year 1: Mow to height of approximately 50mm monthly to control flush of annual species present in soil and enable perennial species and grass to compete and develop root systems.

Debris to be removed on a frequent basis (reptiles may otherwise bask or hide under this).

Years 2-5: 2 cuts per annum. 1) spring cut around Easter (no later than first week in May) to remove first flush of grass and produce a sturdier flowering meadow. Cut to approximately 50mm height and remove arisings. 2) Fortnightly cuts between April - September to maintain height at 50mm. 3) late summer cut in late August. Cut at height of approximately 50mm and allow 'hay cut' to dry on site for 7 days to assist seed dispersal, and then remove all arisings from site.

All edges shall be trimmed, grass cutting shall be removed from site.

Suitable selective weed killers should be used as required to spot treat and remove any invasive weed species.

Any compaction within turf should be spiked as required, using current standard horticultural practices. Any levelling and hollows within turf should be rolled/ top dressed as required, using current standard horticultural practices.

If any patches or areas of dead turf appear, these should be re-cultivated and seeded with similar specification grass as was previously used. Debris to be removed on a frequent basis (reptiles may otherwise bask or hide under this).

**3.11 Ecological Habitat Protection and Creation Features:** All ecological features on site should be monitored and inspected at least twice a year (between March and September).