

Master Specification

Part PR-LS-C2

Planting

September 2024



Government of South Australia
Department for Infrastructure
and Transport

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Document Information

Document Information	
K Net Number:	13718257
Document Version:	1
Document Date:	30/09/2024

Document Amendment Record

Version	Change Description	Date
0	Initial issue	31/08/2023
1	Updated cover page	30/09/2024

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PR-LS-C2 Planting

1 General

- a) This Master Specification Part specifies the requirements for planting of tubestock, general nursery stock, aquatic plants, native grasses, and advanced trees, including:
 - i) the documentation requirements, as set out in section 2;
 - ii) the soil testing requirements, as set out in section 3;
 - iii) the weed control requirements, as set out in section 4;
 - iv) the setting out requirements, as set out in section 5;
 - v) the preparation of planting holes, as set out in section 6;
 - vi) the planting method requirements, as set out in section 7;
 - vii) the fertiliser requirements, as set out in section 8;
 - viii) the root control requirements, as set out in section 9;
 - ix) the tree stakes for advanced tree requirements, as set out in section 10;
 - x) the marker stake requirements, as set out in section 11;
 - xi) the tree tie requirements, as set out in section 12;
 - xii) the tree guard requirements, as set out in section 13;
 - xiii) the weed mat requirements, as set out in section 14;
 - xiv) the mulch requirements, as set out in section 15;
 - xv) the plant survival rate requirements, as set out in section 16; and
 - xvi) the Hold Point requirements, as set out in section 17.
- b) This Master Specification Part does not cover the requirements for lawn establishment (refer to PR-LS-C3 “Lawn Establishment”).
- c) The Contractor must ensure that where required under the *Controlled Substances Act 1984* (SA), and the *Controlled Substances (Pesticides) Regulations 2017* (SA), all workers undertaking pest control work must hold a current Pest Management Technician’s License. The Contractor must provide evidence of the Pest Management Technician’s Licenses prior to commencement of a spraying program, as part of the Quality Management Records.

2 Documentation

2.1 Quality Management Records

In addition to the requirements of PC-QA1 “Quality Management Requirements” or PC-QA2 “Quality Management Requirements for Major Projects” (as applicable), the Quality Management Records must include:

- a) current Pest Management Technician’s Licenses, in accordance with section 1c); and
- b) confirmation that setting out has been carried out in accordance with the requirements of section 5.

3 Soil testing

Prior to planting, soil testing must be undertaken in accordance with PR-LS-C7 "Topsoil and Earthworks".

4 Weed control

- a) Before planting commences:
 - i) an area of 1200 mm diameter around the individual plant must be sprayed for weeds;
 - ii) where existing vegetative growth exceeds a height of 150 mm, vegetative growth must be slashed to 50 mm prior to spraying of weeds;
 - iii) trash build-up and cut material must be removed from the area prior to spraying with a knock down systemic herbicide (Roundup or equivalent) incorporating an herbicide marker dye; and
 - iv) where weed control is to be undertaken in and around waterways and wetlands, Roundup Biactive (or equivalent) must be used.
- b) Herbicides must be used according to the manufacturer's recommended rates and any off-target damage must be rectified by the Contractor.

5 Setting out

- a) Prior to commencing Works on Site, the Contractor must set out the location of planting areas and the location of individual plants in accordance with the Design Documentation.
- b) The Contractor must provide 2 days prior notification to the Principal when setting out is to occur to allow for inspection of the set out, which will constitute a **Hold Point**. Planting areas and individual plants must not be planted until the Hold Point has been released.
- c) Plants must be set out in accordance with the Reference Documents (including the relevant Austroads guidelines) and other Utility Service Authority legislation and regulations.
- d) Unless an alternative distance is stated in the Design Documentation:
 - i) trees and large shrubs must not be planted within 2.0 m of any fence or roadside barrier;
 - ii) trees must not be planted within 2.0 m of any pedestrian or cycle path; and
 - iii) large shrubs must not be planted within 3.0 m of any pedestrian or cycle path.
- e) Aquatic plants must generally be planted along the edges of water channels, swales, and detention ponds. In retention ponds with permanent water, planting must occur at the permanent water level in locations such that the water depth is not more than 100 mm above the base of the plant.
- f) The Contractor must provide written verification that setting out has occurred in accordance with this section 5 as part of the Quality Management Records.

6 Preparation of planting holes

- a) As far as practicable, topsoil and subsoil must be kept separate from mulch.
- b) Only topsoil free from deleterious material may be used for backfill for planting.
- c) Unsuitable material brought to the surface during excavation of planting holes must be removed from the Site by the Contractor.
- d) The sides of the planting holes must be rough sided to create an irregular surface which will facilitate root penetration.

- e) Minimum planting hole sizes must comply with the requirements set out in Table PR-LS-C2 6-1.
- f) Where underground services are present, planting holes must be dug by hand.
- g) Where planting into riplines has been specified:
 - i) planting areas must be cross-ripped to a minimum depth of 300 mm at ripline spacings of 500 mm;
 - ii) riplines must follow contours; and
 - iii) ripping must not occur within the extent of existing vegetation to be retained or the dripline of existing trees to be retained.

Table PR-LS-C2 6-1 Planting hole sizes

Parameter	Advanced trees	Tubestock, viro-tubes and general nursery stock	Aquatic plants planted with a hand trowel, spade, or similar tool
Hole diameter	300 mm greater than the diameter of the plant root ball.	150 mm greater than the diameter of the plant root ball.	Large enough to accommodate the plant's root ball.
Hole depth	Depth of the root ball. Subsurface material at the bottom of the hole must be decompacted to a depth of 150 mm and re-compacted.	Subsurface material at the bottom of the hole must be decompacted to a depth of 100 mm and lightly compacted.	Large enough to accommodate the plant's root ball.

7 Planting method

7.1 General

- a) Prior to planting:
 - i) the plant must be watered and the root ball fully moist;
 - ii) TerraCottem Universal (or equivalent) must be thoroughly mixed into the soil in accordance with the manufacturer's instructions;
 - iii) plants must be removed from the containers and planted in such a way that the roots are not disturbed;
 - iv) roots must not be teased out;
 - v) the plant must be placed vertically in the hole or ripline and the hole backfilled;
 - vi) the backfill must be lightly consolidated to remove air pockets around the root ball and to ensure that the plant remains upright after watering; and
 - vii) the plant must be set at a height such that the surface of the potting medium is at the same level as the surrounding soil surface.
- b) Except for plants placed in riplines and aquatic plants placed in water, a shallow watering basin of a minimum 400 mm diameter (800 mm for advanced trees) by 100 mm deep, capable of holding a minimum of 10 litres of water (50 litres for advanced trees), must be constructed at the base of each plant.
- c) Each plant must receive 20 litres (50 litres for advanced trees) of clean potable water within 30 minutes of planting.
- d) After planting, all containers, labels, rubbish, debris, spoil, and other surplus material must be removed from the Site.
- e) For advanced trees the following must apply:

- i) before planting:
 - A. the base and sides of the planting hole must be moist;
 - B. when trees are being unloaded and positioned the root ball must be supported and trees must not be lifted only by the trunk;
 - C. the trunk must be protected and a tree sling must be attached as close to the root ball as practical;
 - D. a bar or timber must be positioned under the root ball for support, and an additional sling must be used to hold the bar or timber in position when lifting; and
 - E. trees must be oriented so that the peg embedded in the root ball or the red dot marked on the stem indicating north at the nursery faces north in the new planting position;
 - ii) balled and burlapped stock must be placed in the hole before the hessian covering is repositioned. Then, to ensure root growth and access to nutrients and water, the hessian must be pulled down off the root ball and left in the bottom of the hole. The hessian must not be pulled from under the plant, to prevent root damage; and
 - iii) where a tree is supplied in other containers or root control bags, the container or bag must be removed immediately prior to planting. If a root control bag is enclosed in a wire basket, the basket can be left around the root ball, but the lifting handles must be cut off 100 mm below the soil surface.
- f) Where aquatic plants are grown en masse, plants must be divided into the number of divisions specified in the plant schedule as specified in the Construction Documentation.

7.2 Backfill

- a) Backfill must consist of soil, which may be material excavated from the planting hole or suitable topsoil sourced from the immediate worksite.
- b) Where suitable soil is not available from the planting hole or immediate worksite, imported soil must be used.
- c) Imported soil must be in accordance with PR-LS-C7 "Topsoil and Earthworks".
- d) Soil for tree containers must be as specified in the Design Documentation.
- e) Mulch must not be mixed with soil backfill.

8 Fertiliser

- a) TerraCottem Universal must be installed at the time of planting in accordance with the manufacturer's recommended installation methodology and rates.
- b) Proposals to use alternatives to TerraCottem Universal must be submitted to the Principal for approval under the process set out in PC-CN3 "Construction Management" and must be accompanied by appropriate supporting documentation. Approval for the use of alternatives will be at the sole discretion of the Principal. Alternatives to TerraCottem Universal must not be used until the Hold Point in PC-CN3 "Construction Management" has been released.

9 Root control

Root control, root barriers and root directors must be in accordance with the Design Documentation. Installation of root control, root barrier and root director must be in accordance with the manufacturer's instructions.

10 Tree stakes for advanced trees

Advanced trees must be planted with 2 50 × 50 × 2,500 mm hardwood stakes installed vertically to a minimum of 750 mm deep into the ground, located a minimum of 500 mm from the trunk to avoid damage to the root ball.

11 Marker stakes

- a) All plants other than advanced trees must be identified by marker stakes. Stakes must be straight, free from knots or twists and pointed at one end, and driven a minimum of 250 mm into the planting hole with no less than 500 mm remaining above ground level.
- b) Marker stakes must be in accordance with the Design Documentation, and at a minimum comply with the following requirements:
 - i) bamboo stakes 750 mm long, 10-12 mm diameter; and
 - ii) hardwood stakes 750 mm long, 25 × 25 mm width/depth.

12 Tree ties

- a) Where tree ties are specified in the Design Documentation, they must be polyethylene 50 mm wide and installed in accordance with the manufacturer's instructions.
- b) In relation to tying:
 - i) one loop or figure-eight tie must be placed between each stake and the tree trunk;
 - ii) each tie must be secured near the bottom of its stake and should permit some movement under normal wind conditions without allowing the roots to move or the trunk or branches to rub against the stake;
 - iii) the tie must have a broad, smooth surface where it meets the trunk and enough elasticity to minimise trunk abrasion cutting; and
 - iv) where advanced trees are subject to lateral movement in areas of high wind, 100 mm of black carpet underlay must be wrapped around the trunk and secured by the tree tie.

13 Tree guards

- a) Where tree guards are specified in the Design Documentation, they must be rigid polypropylene fluteboard (or equivalent) - 450 mm high with 230 mm wide sides and must be installed in accordance with the manufacturer's instructions.
- b) Rigid polypropylene fluteboard tree guards must be installed with one hardwood and one bamboo stake to prevent the tree guard from spinning.
- c) Support stakes must extend 50 mm above the tree guard and be driven a minimum of 250 mm into the ground.

14 Weed mats

Where weed mats are specified in the Design Documentation, they must be Jutemat Biodegradable (or equivalent) 750-800 gsm, 600 × 600 mm and must be installed in accordance with the manufacturer's instructions.

15 Mulch

- a) At a minimum, mulch must be evenly spread to the requirements set out in Table PR-LS-C2 15-1.

- b) All mulch material must:
 - i) slope toward the base of stems of plants so that the mulch is not in contact with the stems of the plants, and must be raked to an even surface flush with the surrounding finished levels; and
 - ii) be well leached, free from deleterious material such as soil, weeds, sticks, sawdust and plastic.
- c) Mulch available from the removal of on-site vegetation must be used only when approved for this use by the Principal.
- d) Unless specified in the Design Documentation, imported mulch must be coarse hardwood or equivalent, with no greater than 5% fines content. Proposals to use alternatives to hardwood mulch must be submitted to the Principal for approval in accordance with the process set out in PC-CN3 "Construction Management". Approval for the use of alternatives will be at the sole discretion of the Principal. Alternatives to hardwood must not be used until the Hold Point in PC-CN3 "Construction Management" been released.

Table PR-LS-C2 15-1 Mulch requirements

Parameter	Advanced trees	General nursery stock	Tube stock	Native grasses
Average thickness (mm)	100	100	100	20
Minimum radius coverage, measured from plant (mm)	600	600	600	300

16 Plant survival rates

At a minimum, plant survival rates must meet the benchmark requirements set out in Table PR-LS-C2 16-1.

Table PR-LS-C2 16-1 Minimum plant survival rates

Maintenance year	Tubestock and general nursery stock survival rates (% survival)	Advanced tree survival rates (% survival)
Year 1	100%	100%
Year 2	95%	100%
Year 3	90%	100%

17 Hold Points

Table PR-LS-C2 17-1 details the review period or notification period, and type (documentation or construction quality) for each Hold Point referred to in this Master Specification Part.

Table PR-LS-C2 17-1 Hold Points

Section reference	Hold Point	Documentation or construction quality	Review period or notification period
5b)	Notification of planting area set out	Construction quality	48 hours notification