Master Specification
Part PR-LS-D2

Landscape Design

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PR-LS-D2 Landscape Design

1 General

a) This Master Specification Part sets out the requirements for landscape design including:

i) the documentation requirements, as set out in section 2;

ii) the requirements for the achievement of Green Infrastructure targets, as set out in section 3;

iii) the water sensitive urban design (WSUD) requirements, as set out in section 4;

iv) the safety requirements, as set out in section 5;

v) the plant species palette requirements, as set out in section 6;

vi) the requirements relating to vegetation management for train operations, as set out in section 7;

vii) the landscape design requirements for batters, as set out in section 8;

viii) the irrigation design requirements, as set out in section 9;

ix) the stakeholder consultation requirements, as set out in section 10;

x) the requirement to identify early design and construction activities, as set out in section 11; and

xi) the cost estimation requirements, as set out in section 12.

b) Where the Contract Documents specify that the Contractor must comply with PR-LS-D1 “Landscaping and Urban Design”, the requirements of PR-LS-D1 “Landscaping and Urban Design” will apply to the exclusion of this Master Specification Part.

c) The landscape design must comply with the Reference Documents, including:

i) Department EHTM Attachment 4B - Vegetation Impact Assessment Guideline, including minimum setbacks from rail lines (available from: https://dit.sa.gov.au/standards/manuals#EHTM);

ii) Green Infrastructure Commitment (available from: https://dit.sa.gov.au/standards/standards_and_guidelines);

iii) Department of Environment, Water and Natural Resources: ‘Water sensitive urban design’ (available from: https://cdn.environment.sa.gov.au/environment/docs/water-sensitive-urban-design-policy-gen.pdf);

iv) Department Operational Instruction 19.8 - Trees in Medians and Roadsides in the Urban Environment (available from: https://dit.sa.gov.au/standards/standards_and_guidelines);

v) ODASA Principles of Good Batter Design (available from: https://www.odasa.sa.gov.au/); and

vi) all relevant statutory requirements and Reference Documents related to the clearances of trees to Utility Services.

d) The landscape design must comply with the requirements set out in PR-PF-D1 “Designing for Accessibility”.

2 Documentation

2.1 Design Basis

In addition to the requirements of PC-EDM1 “Design Management”, the landscape Design Basis must include design parameters required to achieve the Green Infrastructure Commitment and Green Infrastructure targets set out in this Master Specification Part (e.g. minimum verge and median widths and soil depth to accommodate street trees).

2.2 Design Report

In addition to the requirements of PC-EDM1 “Design Management”, the landscape Design Report submitted as part of the Preliminary Design Documentation must include:

a) a landscape design philosophy and principles that have been used to develop the landscape design for the Project;

b) confirmation that the landscape design achieves the canopy cover targets set out in section 3, including:

   i) details of the existing canopy cover in the Project area and estimated tree canopy cover (at maturity following planting), measured in square metres and as a percentage of the total Project area; and

   ii) estimated canopy cover (at maturity following planting) over all footpaths and cycle paths in the Project area, measured as a percentage of the footpath and cycle path area;

c) a description of the WSUD elements incorporated into the landscape design, as required by section 4;

d) details of the CPTED evaluation of the design, as required by section 5;

e) the percentage of proposed new landscape plantings that are local native species;

f) a plant species palette, including total quantities of plants, as required by section 6;

g) where applicable, a vegetation management for train operations risk assessment, as required by section 7;

h) an irrigation strategy, as required by section 9;

i) a summary of stakeholder consultation undertaken and feedback received (where applicable), as required by section 10;

j) a summary of early construction activities undertaken or proposed, as required by section 11;

k) cost estimates for landscape construction and maintenance as required by section 12; and

l) all necessary cross references to other relevant discipline packages, documents, drawings, or reports.

2.3 Design Drawings

In addition to the requirements of PC-EDM1 “Design Management”, the Design Drawings must:

a) identify existing vegetation which is to remain after completion of the Works or Temporary Works clearly differentiated from proposed new landscaping, including offset plantings for vegetation removed;

b) include sufficient detail to fully communicate the intent of the proposed final landscape design including any proposed batter stabilisation treatments;

c) identify areas to be landscaped including planting schedules with species, total quantities, spacings and planting offset distances, and plant species quantities per planting bed on each sheet;

d) accurately show all infrastructure elements on all relevant drawings; and

e) be clear and easily interpretable.

2.4 Maintenance Plan

In addition to the requirements of PC-CN2 “Asset Handover”, the landscaping Maintenance Plan must include:

a) the maintenance activities that will be required of a contractor during the establishment and 1-3 year maintenance period;

b) details of the ongoing / routine maintenance that will be required of the Department or council, or other asset managers, including frequency of operations, replacement planting and other activities required to maintain the asset to the design intent; and

c) details of maintenance accessibility requirements for all landscape areas.

3 Achievement of the Green Infrastructure targets

a) The landscape design must incorporate sufficient shade trees and other landscaping elements as required to ensure achievement of, in order of precedence:

   i) any applicable requirements of the Contract Documents regarding Green Infrastructure, except for those listed below in sections 3a)ii) and 3a)iii);

   ii) the Green Infrastructure targets included in the Green Infrastructure Assessment, if one has been prepared in the planning phase of the Project; and

   iii) the standard Green Infrastructure targets set out in Table PR-LS-D1 3-1.

b) The Contractor must ensure the landscape design process commences sufficiently early in the Project’s design phase and is integrated with the road, rail and other infrastructure design process to ensure:

   i) road design parameters and constraints are informed by landscaping requirements;

   ii) road design decisions facilitate the achievement of the Green Infrastructure objectives and targets (not just landscaping for “leftover” spaces);

   iii) adequate space is provided above and below ground for tree planting, with consideration of applicable setback requirements for road, rail and other infrastructure (e.g. consider median and verge widths to allow for the inclusion of trees);

   iv) suitable soil volumes are provided to enable healthy tree growth; and

   v) infrastructure for landscape irrigation (e.g. conduits, controllers, water meters, etc.) is integrated with civil works.

Table PR-LS-D1 3-1 Standard Green Infrastructure targets

Standard Green Infrastructure targets
Provision of shade trees to achieve ≥20% increase in existing canopy cover in the Site (measured at maturity).
Provision of shade trees to improve amenity for pedestrians, cyclists and public transport customers, targeting ≥50% canopy cover (measured at maturity) over all footpaths and cycle paths in the Site, including those existing prior to the Commencement Date.
Where new or upgraded car parking areas are included in the Works, ≥50% of vehicle spaces must have some degree of canopy cover (at maturity).
Incorporation of WSUD elements to achieve the WSUD performance targets for water quality, peak flow and flood risk as set out in Department of Environment, Water and Natural Resources: 'Water sensitive urban design'.
A minimum of 50% of new landscape plantings must be local native species suited to local conditions, having regard to future impacts of climate change.

4 Water sensitive urban design (WSUD)

In relation to WSUD, the landscape design must:

a) passively irrigate landscape plantings;

b) minimise peak stormwater flows;

c) improve water quality;

d) be simple to minimise maintenance requirements; and

e) ensure basins, wetlands or swales have the flattest batter gradients possible, with batter gradients no steeper than 1V:5H, to permit the establishment and maintenance of vegetation.

5 Safety

a) The Principal places high importance on safety. The Contractor must ensure that safety principles are considered throughout the design, construction, and maintenance process. This includes:

   i) ensuring landscape design treatments and elements do not compromise clear zones for pathways, roads and railways;

   ii) ensuring safe maintenance access is incorporated as a fundamental element of the design; and

   iii) ensuring the landscape design does not present safety issues to the public.

b) The Contractor must undertake a crime prevention through environmental design (CPTED) review of the landscape design and include details of that review in the landscape Design Report.

6 Plant species palette

a) The landscape design must:

   i) give preference to the use of local native plants and species that are suited to local conditions;

   ii) consider deciduous trees where winter sun will benefit the microclimate of an area;

   iii) utilise species that are suited to projected future climate conditions; and

   iv) select tree and plant species for their ultimate height and growth habits, longevity, shade and solar access, habitat and biodiversity value, low irrigation and maintenance requirements.

b) The Contractor must provide a plant species palette which must include the species selection proposed for each planting area, plant spacings, quantities of each species, and planting offset distances from Utility Services and infrastructure for each plant species.

c) The plant species palette required by section 6b) must be included in the landscape Design Report.

7 Vegetation management for train operations

a) Where the Works or Temporary Works are in the vicinity of railway lines, the Contractor must undertake a risk assessment of existing vegetation and proposed landscape treatments to identify elements that have the potential to foul train operations.

b) The risk assessment required by section 7a) must be included in the landscape Design Report.

c) Vegetation that has the potential to foul train operations must be identified for approval by the Principal prior to planting.

8 Batters

In relation to batters, the landscape design must:

a) be in accordance with ODASA Principles of Good Batter Design;

b) ensure batters are integrated with the drainage, urban and landscape design;

c) provide smooth, tapered transitions between cuttings, fill embankments, and existing landforms;

d) include appropriate erosion control solutions and landscape treatments to maintain slope mass and surface stability;

e) ensure surface treatments and gradients of batters are compatible with access and maintenance requirements;

f) ensure that grass requiring mowing or slashing is not included on batters steeper than 1V:4H;

g) consider the use of retaining structures and terracing to reduce the gradients of batter slopes; and

h) ensure the design and maintenance of batters comply with the requirements of PC-EDM2 “Safety Management in Design”.

9 Irrigation

a) The Contractor must develop an irrigation strategy which must identify:

   i) watering requirements for plant establishment and maintenance (for each landscape typology);

   ii) stakeholder requirements;

   iii) sources of water including the use of recycled water;

   iv) water connection points; and

   v) irrigation conduit locations.

b) The irrigation strategy required by section 9a) must be included in the landscape Design Report.

c) The Contractor must develop a detailed irrigation design based on the agreed irrigation strategy.

10 Stakeholder consultation

Where required by the Contract Documents, the Contractor must:

a) undertake stakeholder or Third Party Asset owner consultation for landscaping and maintenance requirements; and

b) liaise with Utility Service Authorities to ensure Utility Services and related infrastructure are fully integrated with the design of the landscaping.

11 Early design and construction activities

a) The Contractor must identify any landscape design or construction activities recommended to be undertaken before the commencement of civil permanent Works on Site. Early design and construction landscape activities to be considered include:

   i) identifying opportunities for plant rescue and collection of native plant seed and propagules prior to vegetation removal;

   ii) identifying opportunities to reuse site-won mulch and timber from vegetation removals;

   iii) identifying opportunities to reuse site topsoil;

   iv) identifying requirements for soil preparation for landscaping;

   v) establishment of Tree Protection Zones for existing trees to be retained and protected within the Site in accordance with PC-ENV2 “Environmental Protection Requirements”; and

   vi) identifying plant and advanced tree supply.

b) Any early design and construction activities identified and proposed must be included in the relevant planning study submission or the landscape Design Basis (as applicable).

12 Cost estimates

Cost estimates for all landscape design components must be provided as a schedule of rates for construction and maintenance in the landscape Design Report at each of the design review stages.