

PART D37 DESIGN - URBAN AND LANDSCAPING DESIGN

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1. GENERAL

This Part specifies the requirements for the Urban and Landscape Design, which includes the design of elements such as soft landscaping, feature lighting, the architecture of structures (eg bridges, buildings, noise barriers, retaining walls, road furniture and fences) and public art.

The Urban Designer(s) and Landscape Architect(s) must be eligible for membership of the DPTI Panel Contract for Urban Design and Landscape Design respectively.

2. REFERENCES

Unless specified otherwise, all design must be undertaken in accordance with the following:

- (a) *Disability Discrimination Act 1992*(Cth)
- (b) Statutory requirements for clearances of trees to Utility Services
- (c) DPTI Landscape Guidelines:
 - LA 100 Introduction to Landscape Analysis, Design and Documentation
 - LA 101 Landscape Analysis Guidelines
 - LA 103 Landscape Concept Guidelines
 - LA 104 Landscape Final Design Guidelines
- (d) DPTI Vegetation Removal Policy
- (e) DPTI Clear Zone Guideline
- (f) Austroads AGRD03/09 Guide to Road Design Geometric Design Part 3
- (g) Austroads AGRD04/09 Guide to Road Design Intersections and Crossings - General Part 4
- (h) Austroads AGRD04A/09 Guide to Road Design Unsignalised and Signalised Intersections Part 4A
- (i) Austroads AGRD04B/09 Guide to Road Design Roundabouts Part 4B
- (j) Austroads AGRD04C/09 Guide to Road Design Interchanges Part 4C
- (k) Austroads AGRD05/08 Guide to Road Design Drainage Design Part 5
- (l) Austroads AGRD06/09 Guide to Road Design Roadside Design, Safety and Barriers Part 6
- (m) Austroads AGRD06A/09 Guide to Road Design Pedestrian and Cyclist Paths Part 6A
- (n) Austroads AGRD06B/09 Guide to Road Design Roadside Environment Part 6B
- (o) DPTI Guidelines for Disability Access in the Pedestrian Environment.
- (p) DPTI Road Design Standards and Guidelines:
 - DP 001 General Requirements
 - DP 002 Title and Index
 - DP 003 General Construction
 - DP 004 Vegetation Removal
 - DP 005 Geometric Setout
 - DP 006 Drainage

- DP 008 Final Surface Contours
- DP 013 Lighting
- DP 014 Longitudinal Section
- DP 015 Cross Section
- DP 016 Drainage Longitudinal Sections
- DP 017 Landscape Design
- DP 018 Irrigation

DPTI standards, guidelines and policies are available from: <http://www.dpti.sa.gov.au/standards>.

The design must have regard to the principles contained in:

- (a) The South Australian Government Urban Design Charter
<http://dataserver.planning.sa.gov.au/publications/1040p.pdf>
- (b) Planning SA: Transport Choice and Urban Design – Design Issues for Accessible Neighbourhoods
<http://www.sapo.org.au/pub/pub521.html>
- (c) SA Government, Department of Justice, Crime Prevention Unit – Crime Prevention Through Environmental Design Resources <http://www.cpu.sa.gov.au/resources.html>
- (d) Sustainable Landscapes
<http://www.environment.sa.gov.au/botanicgardens/pdfs/sustainable.pdf>
- (e) Planting Indigenous Species Policy
http://www.environment.sa.gov.au/biodiversity/pdfs/is_policy.pdf
- (f) Human Rights and Equal Opportunity Commission, Disability Rights
http://www.hreoc.gov.au/disability_rights/index.html
- (g) RTA NSW: Bridge Aesthetics Design Guidelines (available from
<http://www.rta.nsw.gov.au/constructionmaintenance/urbandesign/index.html>)

3. GENERAL PRINCIPLES

The design must incorporate the principles of:

- (a) Ecologically Sustainable Development (ESD);
- (b) Crime Prevention Through Environmental Design (CPTED);
- (c) Equity of access, including disability access requirements;
- (d) Water sensitive urban design (WSUD);
- (e) Re-use or recycling of materials;
- (f) Energy efficiency of materials and maintenance requirements; and
- (g) Minimising Whole-of-Life costs.

4. DESIGN REQUIREMENTS

4.1. General

This clause describes the desirable level of treatment that should be applied to the design. Where applicable, the Contractor's design must incorporate the treatments described below to the extent specified in the Contract Specific Requirements. The design must include the integration of

- (a) landscaping and revegetation;
- (b) structures, including urban design finishes and treatments;
- (c) lighting, including feature lighting;
- (d) signage, including support structures;
- (e) acoustic control and road furniture, including noise and safety barriers;
- (f) public art; and
- (g) landscape maintenance access devices.

The Landscape Architect(s)/Urban Designer(s) must work collaboratively as part of a multidisciplinary team. In developing the landscape and urban design, the Alliance Participants must:

- (a) ensure compliance with all safety requirements;
- (b) ensure the landscape design incorporates offsets for impacted native, amenity, regulated and significant vegetation in accordance with the DPTI Vegetation Removal Policy, Native Vegetation Act 1991 and Development Act 1993, where relevant;
- (c) ensure the interrelationship of individual design elements and consider their relationship to the whole;
- (d) ensure that the development of the design is such that appropriate landscape and urban design solutions are developed for all visible areas of the project;
- (e) ensure the landscape and urban design is fully coordinated and integrated with road infrastructure and utility services so as to compliment without compromising structural integrity, functionality or access;
- (f) ensure the infrastructure strengthens the local character of the area by responding to the social, cultural and environmental characteristics;
- (g) ensure the design is capable of evolving with operational requirements and changing community attitudes;
- (h) ensure safe, efficient and legible circulation routes for pedestrians, cyclists and people with disabilities;
- (i) ensure a high standard of design to achieve quality infrastructure that is visually attractive and interesting, sophisticated and contemporary; and
- (j) incorporate sustainable design principles such as water management, energy efficiency and biodiversity.

4.2. Access and Movement

The project should enhance and improve the connectivity and safety of vehicle, pedestrian and cyclist routes within and adjacent to the corridor.

The Design Criteria include:

- (a) Achieve 'positive' space beneath the structure that has active uses and is attractive in appearance.
- (b) Achieve movement corridors beneath and/or adjacent to the structure by providing appropriate connections to adjacent properties and local/arterial roads.
- (c) Minimise 'left-over', 'negative' or purely visual spaces beneath the structure that lack positive surveillance and activation.

The Technical Requirements include:

- (a) Wherever possible, improve pedestrian and cycle movement lines across the local access roadway to maintain and enhance connections between adjacent land uses and zones.
- (b) Select materials, proportion spaces and plan uses to support the variety of spaces within the road corridor and position these in relation to each other for compatibility of uses and continuity of access and movement.
- (c) Create opportunities for adjacent existing uses to engage with new uses beneath and beside the structure, enhancing, where possible, their amenity and function.
- (d) Ensure the project does not restrict or prevent access to adjacent uses; if necessary, provide for new entries and connections to cycle and pedestrian networks.

4.3. Safety

Sight Visibility

The Design Criteria include:

- (a) Ensure driver sight distance and visibility are not compromised by landscape and urban design elements and treatments.

Clear Zones

The Design Criteria include:

- (a) Clear zones must not be compromised by landscape and urban design treatments and elements.

The Technical Requirements include:

- (a) Careful consideration must be given to the placement and urban design integration of any safety barriers to protect traffic from piers within clear zones.

Road Safety

The Design Criteria include:

- (a) Landscape and urban design treatments must be designed to prevent debris and obstacles entering roadways and must assist in reducing driver distraction.
- (b) Provide a level of visual variety and interest that promotes driver alertness and awareness of the road corridor environment.

The Technical Requirements include:

- (a) Low sheen, non-reflective urban design finishes should be used to minimise headlight and sun glare.
- (b) Avoid the use of loose stone/gravel mulch in roadway areas where errant vehicles could throw mulch onto the roadway or where it could spill on to pedestrian/cyclist pathways or be thrown/dropped on to roadways.
- (c) Transparent materials must be shatterproof.
- (d) Urban design treatments must be simple, clutter-free and easily interpreted without causing driver distraction.

Pedestrian and Cyclist Safety

The Design Criteria include:

- (a) Pedestrian and bicycle facilities must be safe, user friendly and integrated with the road design.

The Technical Requirements include:

- (a) Consider CPTED principles in the design of pedestrian and bicycle facilities.
- (b) Where appropriate, provide signalised crossings for pedestrians and cyclists.
- (c) Landscape and urban design treatments must comply with sight distance and clearance requirements.
- (d) A high level of shade should be provided to pedestrian and bicycle facilities.
- (e) Landscape and urban design treatments should be designed to increase driver awareness of pedestrian and bicycle facilities.
- (f) Provide clear and legible entries and exits to adjacent properties.

Adjacent land use

The Design Criteria include:

- (a) Provide landscape and urban design treatments that satisfy the safety requirements of adjacent land use bordering the corridor.

The Technical Requirements include:

- (a) Ensure landscape treatments are designed and installed in accordance with the requirements of service authorities.
- (b) Ensure the needs and expectations of adjacent property owners and tenants are considered in the landscape and urban design.

4.4. Architectural Character

The architectural character of the project should be fresh and contemporary, reinforcing an integrated view to urban infrastructure provision that sees building communities as an important part of project provision.

Composition, detailing and material selection of architectural elements should be carefully considered, with an emphasis on creatively resolving architectural forms and finishes.

The Design Criteria include:

- (a) Attain a high standard of architectural built form and detail.
- (b) Reinforce a contemporary character to the project and associated public realm development.

- (c) Apply Best Practice building design, detailing and servicing strategies to minimise environmental impact in construction and operation

The Technical Requirements include:

- (a) Respond to the immediate site context, and the character of adjoining streets and open spaces.
- (b) Acknowledge and respond to the cultural context, grounded in the immediate locale but also extending beyond the corridor.
- (c) Develop fresh, contemporary architectural outcomes in built form and detail.
- (d) Consider passive climate design strategies to ameliorate the effects of the structure.
- (e) Explore opportunities presented by contemporary structural, material and environmentally innovations and technologies.
- (f) Modulate the scale of the architectural elements to allow for both compositional clarity at a distance and a richly detailed, fine grained pedestrian experience up close.
- (g) Orient and manipulate screens and noise barriers in response to differing view opportunities on the structure and at ground level.
- (h) Mitigate unfavourable impacts from the structure, such as overshadowing and wind acceleration and turbulence on adjacent public open space and private land.
- (i) Adopt materials, colours and textures from a prescribed palette, applied creatively to reinforce definition of spaces, built form elements and uses.
- (j) Integrate utilities and services within the structural profile to eliminate visible clutter.

Fencing

The Design Criteria include:

- (a) Design of fencing must be integrated with urban design outcomes.

The Technical Requirements include:

- (a) Provide consistent fencing types within the road reserve.
- (b) Maximise consistency of fencing for properties adjoining the road reserve.

Lighting

The Design Criteria include:

- (a) Provide a feature lighting design that enhances the appearance of the structure at night.
- (b) Use lighting to provide safety and security for pedestrians and cyclists.
- (c) Provide feature lighting to reinforce entry points and key features along the route for motorists.
- (d) Design of light poles must be integrated with urban design outcomes.

The Technical Requirements include:

- (a) Select feature lighting that is energy efficient, utilising LED fittings where possible.
- (b) Carefully locate lighting to prevent 'cluttering' of the public realm and, where appropriate, integrate with other elements such as barriers and piers.
- (c) Ensure light pole and luminaire proportions fit into the streetscape with minimal visual impact on the streetscape character.
- (d) Provide direct light where required without 'washing out' or over-illuminating adjacent areas.
- (e) Locate light fittings in an integrated way with other architectural elements, providing regular spacing and articulation.
- (f) Use robust, vandal resistance and low maintenance fittings.
- (g) Ensure consistency in architectural expression by consideration of form, materials and colours of light poles and fittings.
- (h) Light poles must be designed for ease of luminaire replacement.
- (i) Light poles must be designed for ease of replacement in the event of irreparable damage.

Field Cabinets

The Design Criteria include:

- (a) Design, colour, form and placement of field cabinets must be considered with respect to desired urban design outcomes.

The Technical Requirements include:

- (a) Integrate cabinetry with street furniture and provide consistent materials, colours and finishes.
- (b) Integrate locations and footings with planting and other softscape surfaces.

Street Furniture

The Design Criteria include:

- (a) Provide street furniture that contributes towards the successful functioning of the South Road precinct at pedestrian scale, increasing amenity and supporting active use at street level.
- (b) Provide new street furniture including (but not limited to) seating, bins and bike racks.

The Technical Requirements include:

- (a) Carefully place street furniture to prevent 'cluttering' of the public realm.
- (b) Street furniture must fit into the streetscape with minimum visual impact on the streetscape character.
- (c) Ensure robust construction and inclusion of skateboard deterrent features where appropriate to reduce unnecessary maintenance costs.
- (d) Provide consistent architectural expression through consistency in form and materials.
- (e) Street furniture must be constructed of materials that are complimentary to the project architecture.
- (f) Street furniture must be BCA and DDA approved.
- (g) Street furniture must be located within areas of high intensity public and recreational use e.g. bench seats should be located at street level along the footpath/shared path to provide rest points and viewpoints.
- (h) Street furniture must be positioned to reflect the recreational and community uses of the specific site.

4.1 Materials, Colours and Finishes

The materials, colours and finishes selected for all infrastructure elements should enhance their character and personality, and in doing so, improve the journey experience and the way the project integrates into the surrounding area. Choice of materials should reflect and reinforce a local sense of place, a contemporary appearance and preference for sustainable products.

The Design Criteria include:

- (a) Attain a high standard of architectural built form and detail.
- (b) Provide a high level of amenity for pedestrian environments.
- (c) Reinforce a contemporary character to the overall project that reflects a concern for good design.
- (d) Achieve robust, low maintenance finishes.

The Technical Requirements include:

- (a) Select materials that together constitute a consistent palette that reinforce a local identity for the project and express a contemporary architectural character.
- (b) Select materials for permanence and durability.
- (c) Select materials with an understanding of the effects of weathering over a period of time to ensure an enduring high quality finish.
- (d) Use materials that weather in a manner that enhances the material and allows ongoing change without reduction in the inherent qualities of the materials.
- (e) Select materials for low on-going maintenance. Utilise materials that do not require on-going recoating or refinishing.

- (f) Select materials to provide a variety of visual, audible and tactile spatial experiences, particularly when viewed at ground level.
- (g) Select materials for their low embodied energy and potential for future reuse or recycling.
- (h) Where materials are experienced close at hand, utilise materials such as timber to bring warmth and a human tactile quality to key architectural elements.
- (i) Utilise materials that are not highly reflective to avoid glare or focused transfer of heat.

4.5. Public Art

Public art is considered an integral part of the road infrastructure, providing points of reference and interpretation along the route. Public art contributes towards an enjoyable and memorable journey.

Where public art is specified, the Design Criteria include:

- (a) Integrate public art with the architectural design of the project.
- (b) Provide meaningful landmarks and reference points along the route.

The Technical Requirements include:

- (a) Consider public art as a means of contributing towards the overall experience of travel, integrating art, where possible, within items of road infrastructure (e.g. noise barriers, RE walls) and as stand-alone commissioned pieces.
- (b) Design and select public art for its compatibility for purpose integrating with, and complimenting, other urban design and architectural elements.
- (c) Design and select public art for its appropriateness to the urban context of the project - consider, above all, sense of identity and 'place'.
- (d) Ensure only robust and durable materials and finishes are used and that, overall, the public art has no or low maintenance requirements.
- (e) Favour public art expressed elegantly and boldly, avoiding intricate or fussy designs.
- (f) Favour public art that is both contemporary and timeless.

5. LANDSCAPING

5.1. General

Planting of the ground plane beneath and adjacent to the project will contribute towards the overall architectural composition and assist in the visual integration of the project into its surroundings. Planting will contribute towards character and sense of place, provide visual amenity and improve biodiversity.

The Design Criteria include:

- (a) Compliment the physical structure of the structure and assist in its visual integration with the adjacent urban area.
- (b) Provide amenity and usable open space in areas beneath and adjacent to the structure.

The Technical Requirements include:

- (a) Utilise low maintenance techniques such as mulch and automatic drip irrigation. Select plant species that have low irrigation requirements and do not require ongoing fertilising and pruning.
- (b) Only use species suited to the local soils and microclimates.
- (c) Give preference to the use of local native plants and species that are available from local growers.
- (d) Utilise techniques that eliminate weed infestation including soil preparation and mulching.
- (e) Avoid over fussy or visually complex designs.
- (f) Favour controlled use of colour and foliage textures.
- (g) Consider seasonal differences and variety.
- (h) Include plants with distinctive form, foliage and colour where this contributes towards points of identity and recognition, and an overall sense of place.
- (i) Consider ecological sustainability, biodiversity and habitat creation.
- (j) Minimise irrigation requirements through species selection, conditioning of site soils and the use of mulches.

- (k) Select species for their ultimate height and growth habits. Only use species that will not become 'woody' over time and generally do not require pruning.
- (l) Do not select species that are vulnerable to being damaged from foot traffic in public areas.
- (m) Consider CPTED principles in the selection and location of plants.

5.2. Road Corridor Vegetation

The Design Criteria include:

- (a) Provide an attractive, well-vegetated road reserve with landscape plantings appropriate for the function, safety requirements and visual significance of the road corridor.
- (b) Landscape and urban design treatments must contribute to the rehabilitation and enhancement of the existing environment and serve as a catalyst for the general improvement of areas adjacent to the road corridor

The Technical Requirements include:

- (a) Landscape treatments must cover all off-road areas within the extent of site.
- (b) Consideration should be given to extending landscape treatments into the arterial and/or local road network, if they will enhance the environmental outcomes or visual amenity of the project.
- (c) Maximise the use of low maintenance treatments and minimise the use of high maintenance treatments.
- (d) Apply the aesthetic use of plant material to enhance precincts, gateways and views without compromising safety, function or practicability of maintenance.
- (e) Provide for successional replacement and replenishment of landscape treatments (to account for natural plant failure) as landscaped areas develop.
- (f) Landscape works must be maintained throughout the maintenance phase so that they satisfy the required performance benchmarks at handover.

5.1 Swales, Detention Basins and Wetlands

The Design Criteria include:

- (a) Provide Water Sensitive Urban Design solutions to filter and improve water quality and make efficient use of natural rainfall for plant irrigation.
- (b) Provide dense macrophyte plantings to swales, detention basins and wetlands.
- (c) Plantings must be specified and installed in a manner that will assist in stabilising soil, provide habitat and capture contaminants.
- (d) Provide low maintenance treatments that consider weed, siltation, spill and trash management, and provide maintenance access.
- (e) Provide control and holding zones to minimise the impact of chemical spills or harmful liquids entering the water system.
- (f) Consider the movement of birds and animals from adjacent areas to water corridors.

The Technical Requirements include:

- (a) Drainage devices must be integrated into the landscape.
- (b) Vegetation densities and placement must not compromise drainage requirements.
- (c) Drainage design must provide berms and benches of sufficient area at depths that will allow for the establishment of macrophytes.
- (d) Consider use of natural and rock surfacing to direct water flows and slow water velocity.
- (e) Integrate pits and junctions with planting at appropriate heights and densities to maintain flow.
- (f) Direct water to planting areas for natural filtration.

5.3. Batters

The Design Criteria include:

- (a) Design of batters must be integrated with landscape and urban design outcomes

The Technical Requirements include:

- (a) Fill embankment batter gradients must not exceed 1:2 where dependent on vegetation for surface stabilisation.
- (b) Smooth tapered transitions must be provided between earthworks (including cuttings and embankments) and existing landform.
- (c) Hinge points at top and bottom of cuttings and embankments must be rounded off.
- (d) Install appropriate erosion control devices and landscape treatments to maintain slope mass and surface stability.
- (e) Provide necessary soil stability and amelioration treatments required for successful establishment of vegetation.

5.4. Medians and Splitter Islands

The Design Criteria include:

- (a) Integrate all ground surface treatments, clearly defining trafficable and non-trafficable areas and those accessible by pedestrians and cyclists.

The Technical Requirements include:

- (a) Provide hard surfaces on medians and splitter islands less than 2.0 m wide.
- (b) Provide trafficable materials that will withstand maintenance and emergency vehicles.
- (c) Consider opportunities for Water Sensitive Urban Design, particularly the collection of stormwater run-off into swales and bio-remediation pits.
- (d) Where 'soft' surfaces are used, provide edges to contain the material.
- (e) Provide 'hard' surfaces for pedestrian and cycle paths, or where surface stormwater flows are likely to cause erosion.

5.5. Rehabilitate Disturbed Areas

Where areas have been disturbed, the Design Criteria include:

- (a) Stabilise, restore and enhance disturbed areas as early as possible throughout the construction period.

The Technical Requirements include:

- (a) Unless specified otherwise, use native species and prioritise the use of local species.
- (b) Use species that will establish readily in disturbed areas and will tolerate the new site conditions (e.g. increased shade from structure and decreased rainfall beneath).
- (c) Minimise the transfer and introduction of undesirable plant species during earthworks and rehabilitation activities.
- (d) Disturbed and/or newly created riparian zones (including wetlands and drains) must be returned to conditions suitable for recolonisation of riparian species, including recontouring of bank profiles to create necessary habitat conditions relative to water levels.

5.6. Mitigate Negative Sensory Impacts

The Design Criteria include:

- (a) Mitigate potential negative visual and noise impacts on the locality and/or the project works.
- (b) Minimise incompatibilities of treatments between the road corridor and adjoining land uses.

The Technical Requirements include:

- (a) Mitigate visual impacts into and out of the road corridor with landscape treatments such as screening/buffer plantings and mounding, and urban design features such as fences or noise barriers.
- (b) Consult adjoining property owners to integrate landscape and urban design treatments with existing and proposed developments.

5.7. Mitigate Environmental Impacts

The Design Criteria include:

- (a) Provide landscape and urban design treatments that mitigate environmental impacts on the locality.

The Technical Requirements include:

- (a) Maintain or improve water quality by designing landscape treatments that treat storm water before discharge into the Barker Inlet Wetlands.
- (b) Wetland plantings in drainage and sediment control devices must provide habitat and assist in meeting water quality requirements.
- (c) Minimise habitat pollution (from materials such as oil, fuel, cement, bitumen, solvent and cleaning agent contaminants, pesticides, fertilisers and road runoff) through the provision of temporary/permanent detention basins and vegetation buffers.

5.8. Community Considerations

The Design Criteria include:

- (a) Provide landscape and urban design treatments that address any commercial/industrial and community interests of the region.
- (b) Minimise adverse effects on the local character, lifestyles, economies and property values.
- (c) Select and use landscape and urban design treatments that will not become dated over time.

The Technical Requirements include:

- (a) Provide vegetation screens and buffers at interfaces with sensitive land uses.
- (b) Implement 'classic' design treatments that provide a level of enduring community appeal and status over time.
- (c) Provide opportunities for stakeholder/community participation in the development of landscape and urban design themes and treatments.
- (d) Ensure landscape and urban design treatments involving public art are well coordinated to avoid inconsistency of themes/messages and coordinate details including colours, textures and finishes.

5.9. Maintenance

The Design Criteria include:

- (a) Provide landscape treatments that will become self-sustaining over time and are cost effective with regard to ongoing maintenance.
- (b) Provide urban design treatments that are durable and require minimal maintenance and refurbishment over time.
- (c) Provide for easy replacement of urban design components in the event of non-recoverable damage – consider this at the design stage.
- (d) Provide landscape and urban design treatments that incorporate Prudent Industry Practice for Anti-graffiti.

The Technical Requirements include:

- (a) Urban design materials and components must be weatherproof and UV resistant with a minimum 20-year design life.
- (b) Metal structural components, fixings, fasteners etc. must use corrosion resistant materials, manufacturing processes and/or finishes.
- (c) Paint finishes must have a minimum 10-year design life.
- (d) If colour is required, use painted colour treatment for concrete structures, rather than integrated colour additives, whilst maintaining urban design intent.
- (e) All urban design treatments and construction materials must be robustly designed to deter and minimise the effects of vandalism. The design must provide surface finishes and treatments (e.g. paint, anti-graffiti coatings) that can be easily and efficiently maintained whilst still maintaining the urban design intent.
- (f) Provide free-draining finishes and detailing that minimises water ponding sites that create potential for chemical, mould and dirt staining.
- (g) Materials and finishes must be resistant to dust adherence.
- (h) Materials and finishes must be resistant to cleaning fluids and procedures.
- (i) The design, materials and finish of urban design treatments must provide accessibility and ease of mechanical cleaning procedures.

- (j) Urban design detailing must minimise potential for creating litter traps.
- (k) Metal security grilles/cages must be provided to protect all lighting that has the potential to be vandalised.
- (l) Provide concrete or gravel mowing strips where grass areas abut landscape planting areas.
- (m) Minimise grass areas that require slashing/mowing.
- (n) Where grassing is provided, ensure the area is not steeper than 1:3 and select low growing/creeping grass species.
- (o) Avoid narrow strips of vegetation in and around guard rail, noses of medians and splitter islands and fencing alignments. Median and splitter island areas narrower than 2m should be treated as hardstand (paving, concrete, asphalt or crushed rock).

5.10. Maintenance Access Requirements

The Design Criteria include:

- (a) Provide off-road access for maintenance activities where space permits.
- (b) Project works must be designed to permit maintenance activities to be carried out without endangering maintenance crews and road users with minimal disruption to traffic flows.

The Technical Requirements include:

Provide permanent off-road maintenance areas/tracks for critical areas requiring ongoing

6. RECORDS

The following records must be provided to the Principal:

Drawings

Construction drawings which at a minimum:

- (a) show existing vegetation which is to remain after completion of the works differentiated from proposed new plantings/direct seeding;
- (b) be of sufficient detail to fully communicate the intent of the proposed Final Landscape and Urban Design, including location and form of all landscape and urban design features;
- (c) include typical cross sections and perspective drawings; and
- (d) be clear and easily interpretable, including indications of views and vistas, and must be suitable for public display.

As constructed drawings.

Reports

Design reports must be provided at the completion of notional 30% (concept) design and Final Design, which at a minimum include:

- (a) the Landscape and Urban Design philosophy, criteria and recommendations;
- (b) the Landscape Management Plan;
- (c) a provisional list of plant and direct seeding species; and
- (d) a provisional list of quantities.

The records must comply with the requirements of the DPTI Landscape Guidelines.