



Landscape Guidelines: Streetscapes and Public Open Space

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1. Foreword

The City of Swan is the largest local authority by area within the Perth metropolitan region. It is one of the fastest growing regions in the State, with a diverse range of existing and new residential, commercial and industrial development.

Streetscapes and public open space development creates a strong physical image for the City and has aesthetic, social and economic value for the community. Streetscapes and public open spaces help to reinforce the identity of a place, provide facilities for passive recreation and create an environment for pedestrian activity.

The City has a range of natural landscapes that have intrinsic natural and cultural value, many of which occur around specific landforms and associations of native plants that form natural communities. The development of streetscapes and public space should, where possible, take account of naturally occurring plant communities and provide for the enhancement of ecological systems through the introduction of new landscape development.

The City is committed to environmental sustainability including conservation of flora, fauna and water, the use of renewable resources and a preference for water wise designs, with optimum ongoing maintenance methods. The design of streetscape and landscape features is critical to ensuring that public open space is attractive, functional and cost-effective to maintain.

For the purposes of this document public open space (POS) includes streetscapes, medians, road reserves, parks, public access ways and verges.

This document consists of two main sections containing specific statements of intent and design guidelines relating to landscape elements.

Section A provides guidelines for verges, including for residential, commercial and industrial properties. These are usually landscaped by owners or tenants.

Section B refers to POS and streetscapes works that are usually undertaken by developers or the City.

Supporting Appendices include:

Appendix A: Standard Drawings

Appendix B: Embellishment and Amenities Matrix

Appendix C Documentation Checklist

Appendix D Reference Documents

2. Scope of the Guidelines

2.1. These Guidelines apply to all landscape proposals for development of POS by owners' or tenants for residential and commercial properties and for proposals of

public space by developers which will be under the management of the City of Swan.

- 2.2. For development of POS, the Guidelines will be used in the assessment of initial concept designs and detailed designs for landscaping in association with the process for approval of Outline Development Plans.
- 2.3. For establishment or re-development of verges by private landowners, the Guidelines will be used as part of the Development Approval process (where the verge is being established or redeveloped in conjunction with a development proposal for the adjoining private land), or as a basis for advising landowners of Council's requirements (where there is no requirement for a Development Approval).
- 2.4. For development of road reserves (including footpaths, medians and verges) as a part of subdivisional development, the Guidelines will be used as a basis for approval of design drawings submitted by developers in accordance with the subdivision approval and clearance processes.
- 2.5. The Guidelines will also apply to any Application for Development Approval for landscaping works on existing POS by developers or City staff.

3. Principles

These guidelines are prepared in accordance with the following principles. Requests to vary from the detail of these guidelines will be considered with reference to the principles.

3.1. Sustainability

Core to providing and maintaining streetscapes and POS is balancing of the current and future needs of the community, the environment and the economy. Sustainability in POS principally involves ensuring appropriate use and protection of resources, including the best use of parklands, maintaining POS reserves for future generations, and appropriate use of public assets.

3.2. Quality and enjoyment

The City has some great streetscapes and POS. Decisions made in line with these guidelines should continue delivering good quality streetscapes and open spaces that people will safely enjoy using.

3.3. Diversity and flexibility

The City recognises the diversity of places that it manages and is mindful of the importance of POS to a sense of place. It aims to provide a diverse range of experiences and opportunities in streetscapes and POS across the City. Implementation of the Guidelines must be responsive to community needs and local issues. Therefore a degree of flexibility must be available when assessing compliance with the provisions and classifications.

3.4. Access and equity

A range of POS of different size and function should be accessible to all of the City's residents and visitors. There should be an equitable distribution of POS in terms of the amount, condition, and amenity across the City so that locations, user groups or segments of the community are not disadvantaged. The guidelines also have a responsibility to consider intergenerational equity and ensure good quality POS and healthy street environments are available for future generations.

3.5. Financial responsibility

The City must be accountable and responsible in how it uses public funds and assets. These guidelines address the cost of provision and ongoing maintenance in a responsible way. Investment in streetscapes and POS must be justified in terms of an efficient use of resources.

3.6. Integration

POS should be integrated with the urban and natural environment in recognition that it does not operate in isolation from other community functions. This integration can encompass the co-location of facilities such as park amenity and sporting buildings, or the inclusion of significant vegetation, that enhance and compliment the POS.

3.7. Partnership

While the City has an important role in providing POS, it does not need to be the sole provider. Wherever relevant and appropriate, the City will engage with other providers to deliver affordable and accessible POS.

4. Objectives of the Guidelines

These guidelines provide a set of performance criteria and standards for provision of POS with a number of prime objectives being to:

- 4.1. Provide a consistent process for review and approval of designs in keeping with specific landscape requirements and City policy.
- 4.2. Ensure the design process takes into account local character and existing conditions.
- 4.3. Encourage the functional retention and enhancement of naturally occurring vegetation and other natural features.
- 4.4. Provide for the needs of the community by ensuring that POS is functional, accessible and safe for its intended purpose.
- 4.5. Encourage the provision of quality designs that contribute to the built and natural environment and the special character of a place in a sustainable, aesthetic and cost effective manner.

- 4.6. Encourage the use of local native plant species, drought tolerant exotic species and water wise garden designs.
- 4.7. Minimise requirements for irrigation and fertilisers.

Any variation from these Guidelines will be subject to the written approval of the Council, either provided separately or as part of an approval under the Planning and Development Act 2000.

Variations from these guidelines need to be justified on the basis that the design meets the intent, objectives and principles set out in these Guidelines.

Section A: Landscape Guidelines for Residential, Commercial and Industrial Verges

5. Introduction

The intent of this section is to ensure that verges are developed to provide a high level of amenity, accessibility and safety for pedestrians and motorists, to minimise the likelihood of damage to fixtures and to minimise on-going maintenance costs and the use of water and fertilisers.

Landowners/developers of urban and rural property within the City of Swan are encouraged to stabilise and maintain the verge adjacent to their property, including any side verges for corner properties.

Permissible landscape treatments to verges may include the retention of naturally occurring native vegetation, grass, groundcovers and/or organic mulch, with or without irrigation.

6. Irrigation

- 6.1. Dial 1100 for Dial before You Dig or go on line to www.dialbeforeyoudig.com.au
- 6.2. The City of Swan Irrigation System Specification is available as a reference document for all irrigation details.
- 6.3. Water wise design principles should be incorporated into irrigation designs for planting and grass areas.
- 6.4. Water usage shall be in accordance with Water Corporation legislation, with respect to watering times and hours.
- 6.5. Where in-ground irrigation is installed to grassed areas, no part is to protrude above ground level except for pop-up sprinklers during operation.
- 6.6. The location and type of spray outlets should be selected to avoid water spray onto roads, crossovers, paths and other paved areas.
- 6.7. Irrigation controllers and valves shall be installed within the private property boundary.
- 6.8. Lateral pipe work shall be buried a minimum of 300mm below ground level.
- 6.9. Mains pipe work shall be buried a minimum of 450mm below ground level.
- 6.10. All changes of direction for mains shall have thrust blocks of the correct size.

7. Paving

- 7.1. The use of paving as a verge treatment other than for paths and crossovers is not normally encouraged within the City of Swan for reasons concerning safety, drainage and aesthetics.
- 7.2. If you wish to consider paving any portion of your verge you will need to submit a written application, with a detailed plan of your proposal to the City for assessment.
- 7.3. Paving on the verge shall be installed in accordance with the City's specification for crossovers.:
 - STD 21-1s-F
 - STD 21-2s-E
 - STD 21-3s-F
 - STD 21-4s-C
- 7.4. Residents shall be responsible for the maintenance of any paving undertaken by or for them.

8. Structures

- 8.1. Walls, letter boxes, seats and other structures are to be installed within the private property boundary.
- 8.2. Crossovers and other City approved paving to verge areas shall be to the following City Standards (Refer to Appendix A Standard Drawings):
 - STD 21-1s-F
 - STD 21-2s-E
 - STD 21-3s-F
 - STD 21-4s-C
 - STD 27-1s-D
 - STD 29-1s-C
 - STD 29-2s-C
 - STD 29-3s-C
 - STD 29-4s-C
 - STD 40-2s-C
 - STD 47-2s-D
 - STD 75-1s-C
- 8.3. Steps shall comply with the following requirements;
 - Riser dimension range: 115mm minimum to 190mm maximum.
 - Going (tread) dimension range; 250mm minimum to 355mm maximum.
 - Ideal step dimensions are Riser 150mm and Going 280mm.
 - Steps shall not have more than 18 Risers in any one flight.
 - A contrasting coloured strip, not less than 50mm and not greater than 75mm, shall be provided on the Going at the nosing with a minimum luminance contrast of 30% to the background.

9. Shrubs and Groundcovers

- 9.1. The retention, enhancement or re-establishment of naturally occurring native vegetation is encouraged.
- 9.2. Groundcovers or shrubs shall be planted greater than 500mm away from a path, driveway, public utility facility or any other structural element within the verge.
- 9.3. For verge widths less than 6.5m, groundcovers or shrubs that grow to a maximum height of 500mm at maturity may be used. Refer to STD 88-3s and STD 88-4s (Appendix A).
- 9.4. For verge widths greater than 6.5m but less than 8.5m, groundcovers or shrubs that grow to a maximum height of 500mm at maturity may be used within 6.5m of the kerb and up to 1.5m high at maturity for the remaining verge width, subject to not obstructing sight lines and/or creating security hazards for pedestrians and motorists.
- 9.5. For verge widths greater than 8.5m, groundcovers or shrubs that grow to a maximum height of 500mm at maturity may be used within 6.5m of the kerb, then up to 1.5m high for the next 2m and up to 3m high at maturity for the remaining width, subject to not obstructing sight lines and/or creating security hazards for pedestrians and motorists.
- 9.6. For verges that do not have a path, a clear zone consolidated with grass, mulch or other approved material to a minimum width of 1.2 m shall be required over the length of the verge for public access. Refer to STD 88-2s (Appendix B).
- 9.7. Installation of a garden kerb between planted and grassed areas within a verge is to consist of concrete, limestone, unit pavers or other approved material, set flush with the adjacent ground level. Refer to STD 84-1s (Appendix A).
- 9.8. Plant species shall be selected to minimise water, fertiliser and on-going maintenance, with the use of local native species being preferred.

10. Trees

The intent of these Guidelines is to ensure that trees are chosen to reflect the local character and conditions and provide attractive streetscapes and public amenity in the form of shade, improved micro-climate and landscape amenity, and to ensure that trees do not interfere with lighting, paving or other public infrastructure.

- 10.1. Dial 1100 for Dial before You Dig or go on line to www.dialbeforeyoudig.com.au.
- 10.2. Local native tree species are preferred. However upon request the City will provide the name of appropriate tree species.
- 10.3. Tree plantings in roads controlled by MRWA shall comply with MRWA standards.
- 10.4. Trees shall be planted greater than 8 metres from a street light, unless otherwise approved.

- 10.5. Trees shall be planted greater than 1.8m from the driving edge or face of a kerb.
- 10.6. Trees proposed for planting within 1.8m of kerbs and/or any type of paving require an approved root control barrier.
- 10.7. Street trees shall be planted at greater than 8.0m spacings with generally one tree per property frontage and two or three trees per side verge, subject to width and length of verge.
- 10.8. Trees shall be planted greater than 3.0m from private boundaries, unless otherwise approved.
- 10.9. Trees shall not be planted within 3.5m of a cross-over, power pole, sign, fire hydrant, public service inspection pit, overhead wires leading into a property, bus stop or any other structural element.
- 10.10. For corner properties, trees shall not be permitted within 12.0m of the intersecting kerbs - refer STD 88-1s (Appendix A).
- 10.11. Tree planting to verges shall comply with STD 87-1s (Appendix A).

Section B:

Landscape Guidelines for Public Open Spaces, Streetscapes and Developments

11. Introduction

The intent of this Section is to ensure that the design and landscaping of POS provides for a high level of amenity and safety and serves the functions of its intended use, provides accessibility for all users, minimises the use of water and fertilisers, and allows for the cost-effective maintenance of landscaped areas.

While these Guidelines are presented as the City's preferred criteria for landscape design for POS, it is expected that variations will be considered for approval in situations where landscape designs are intended to enhance the particular characteristics or desired theme for a place, provided that the principals of the Guidelines are met.

These Guidelines also serve as a focus for designers to ensure that in addition to aesthetics and visual quality, attention is given to cost effective landscapes with consideration to whole of life maintenance costs.

Landscape development applications are assessed by a multi discipline panel of suitably qualified and experienced staff.

12. Professional Assistance

Where a development is of a large scale and the approval of a landscape plan forms part of the development approval, a professional landscape architect or other designer with a degree and experience in horticulture or urban design should be engaged to complete the drawings. This will assist with the processing of the submission/application.

The City encourages the involvement of a landscape designer at the earliest possible stage in the development project to ensure appropriate consideration of site and landscape factors and the criteria set out in these Guidelines.

13. Park Embellishment Standards

Appendix B provides maximum standards of open space embellishment. In accordance with the principles of these Guidelines (Section 3), the level of embellishment and amenities is related to the function (hierarchy) and purpose (classification) of the park. The matrix contains a sliding scale of provision. Where a higher level of embellishment is requested, this will attract a longer maintenance period (see Section 24 below). The matrix will be applied to new POS and in the redevelopment/renewal of existing POS.

14. Public Open Space Hierarchy

The City has moved to the use of a functional hierarchy for its POS planning and operation in recognition of the variety of the type of parks and the corresponding diversity of needs for these POS areas. The hierarchy ranges from small spaces that serve the immediate surrounding area through to regional spaces that draw visitors from Perth's north-east corridor.

14.1. Local Open Space

Small parklands that service the regular recreational needs of the immediate surrounding area. They provide basic embellishment commensurate with short stays. The City further divides this category into Level 1 and Level 2 embellishment for recreation use. Level 1 is the standard or typically required set of embellishments which provide the appropriate level or service for the community while minimising the operation and maintenance costs for the City. Level 2 allows for a higher standard of embellishment to account for locational opportunities such as destination parks beside waterbodies or adjacent to high activity areas.

14.2. Neighbourhood Open Space

Serves as the recreational and social focus of a community where residents are attracted by the variety of features and facilities, and opportunities to socialise. This form of open space should be designed for longer stays and therefore amenities such as BBQs and toilets may be appropriate. New neighbourhood *sporting* spaces will not be supported by the City during structure planning however they are included in these Guidelines to cover existing or planned sites.

14.3. District Open Space

Principally provide for organised formal sport and recreation for multiple surrounding neighbourhoods. These are high amenity destinations suitable for regular sporting events or festivals. They provide a significant visual break in the urban environment.

14.4. Regional Open Space

The largest and most important provision of POS in the community, they are the focal points for organised sport, recreation, conservation and environmental features. They serve not only residents of the City of Swan but the wider region.

It is acknowledged that not all POS falls neatly into the categories described.

15. Open Space Classification

Open Space serves a wide range of functions within the urban and rural fabrics of the City of Swan. The purpose of an open space influences the range of amenities and embellishments that should be provided. The City uses the categories below when planning and maintaining open space. In practice many spaces function as two or all three of these categories.

- 15.1. Recreational Open Space: Areas for passive pursuits such as BBQs and picnics and active (non-organised) spaces such as walking and cycling paths, play spaces, skate parks, 'kick-around' lawn.
- 15.2. Sporting Open Space: Accommodates competitive sports fields and courts and associated infrastructure.
- 15.3. Environmental Open Space: Comprises bushland, wetlands, streams or drainage features with biodiversity value.

16. Earthworks and Drainage

The intent of these Guidelines is to ensure that earthworks and drainage systems are developed to maximise the on-site infiltration of stormwater and water from irrigation and to prevent any lateral adverse impact on existing wetlands, watercourses and water bodies.

- 16.1. Dial 1100 for Dial before You Dig or go on line to www.dialbeforeyoudig.com.au.
- 16.2. Where a site is adjacent to a natural aquatic system, the earthwork design shall provide for surface runoff to be contained within the site rather than drain into the natural system.
- 16.3. The earthwork design shall incorporate features and functions of the landscape's natural drainage system wherever possible and shall maximise onsite retention and infiltration of rain and water from irrigation.
- 16.4. Gradients for grass areas shall be equal to or flatter than 1:6 and equal to or flatter than 1:3 for planted areas.
- 16.5. Run off of hardstand areas shall drain to adjacent landscaped areas.
- 16.6. All drainage infrastructure e.g. GPT and bubble up pits within a POS is to be clearly drawn and form part of the detailed landscape plans.
- 16.7. New water bodies (ie those not pre-existing the development) that do not serve a drainage function will not be accepted by the City.

17. Irrigation

The intent of these Guidelines is to ensure that irrigation systems are designed and installed to provide reliable water sources, minimise water usage, prevent damage to irrigation equipment and ensure cost-effective maintenance of irrigation components.

- 17.1. Dial 1100 for Dial before You Dig or go on line to [www.dial beforeyoudig.com.au](http://www.dialbeforeyoudig.com.au).
- 17.2. Irrigation shall be designed and installed to the City's Irrigation System Specifications (available on the City of Swan Website) and must be able to be connected to the City's Central Irrigation Control System at time of Handover.
- 17.3. Within subdivisions, water supplies shall not be limited to one water source, with each POS greater than 4000 m² preferably to have its own groundwater supply connected to the City's Central Irrigation Control System.
- 17.4. Bore and pump capacity shall comply with the approved design specification for the Irrigation System Specification and Bore Construction Specification.
- 17.5. Irrigation system designs shall be submitted with landscape drawings and documents for City assessment and approval prior to any landscape works being undertaken.
- 17.6. Designs shall adhere to 'water wise design principles e.g. Hydro-zoning', with the location and type of spray outlet selected to avoid spray onto roads, crossovers, paths, other paved areas and playground equipment.
- 17.7. Designs shall maximise the coefficient of uniformity to enable optimal watering.
- 17.8. Soil cover over pipe work shall be as indicated in the City's Irrigation System Specifications.
- 17.9. Irrigation designs for hours of operation shall be to the requirements of licence constraints as issued by the Department of Water, currently between 6pm and 9am, with the City's preferred time being between 10pm and 6am.
- 17.10. Irrigation within planting areas shall be by emitters, bubblers or soaker type hose.
- 17.11. Grass shall be irrigated using pop-up sprays or gear drive sprinklers.
- 17.12. Where in-ground irrigation is installed in grass, no part shall protrude above ground level except for pop-up sprinklers during operation.
- 17.13. Install all solenoid valves, isolating valves and/or gate valves within POS where practical and include 3M Marker Balls.
- 17.14. Irrigation sprinklers shall be placed greater than 300mm off back of kerb for low volume roads or 1.2m for higher volume roads (worker safety during maintenance).
- 17.15. Irrigation cabinets shall have the City's "P" key locks installed before Handover to the City.

- 17.16. The Developer shall provide the City a copy of any applications and bore licence details issued to the Developer by the Department of Water.
- 17.17. The Bore Licences and Water Allocation for landscaped areas to be handed over to the City from the developer shall be transferred to the City in the name of the City of Swan at Handover.
- 17.18. The bore and pump shall be serviced 4 weeks prior to Handover, with all service history verifications to be provided to the City at Handover.

18. Paving

The intent of these provisions is to ensure that paving is designed to cater for safe and convenient pedestrian access, to ensure access for maintenance purposes and to reduce the need for labour-intensive maintenance of grassed and landscaped areas adjacent to paths and roads.

General

- 18.1. Dial 1100 for Dial before You Dig or go on line to www.dialbeforeyoudig.com.au.
- 18.2. Paths and other paved areas shall be installed in accordance with AS 1428.1/2/3/4:2002, Design for Access & Mobility.
- 18.3. Street and park perimeter paths are to be located parallel to and abutting the kerb.
- 18.4. For paths abutting kerbs, preference is for the width to be equal to or greater than 2.0m from back of kerb but shall be a minimum 1.5m wide.
- 18.5. Preference is for the use of a different paving material, colour and/or texture within 500mm of the back of kerb as a visual and physical safety aid to path users.
- 18.6. Path crossings at roads shall have pram ramps installed to City standards. Refer to STD 60-1s-H (Appendix A).
- 18.7. Shared use paths are to be installed at an effective pavement width of 2000mm.
- 18.8. Shared use paths and designated cycle ways within parks and verges shall intersect at 90 degrees to centre lines plus or minus 20 degrees, with from 500mm minimum to 2.5m maximum radius at both inside and outside corners. Refer to STD 89-1s.
- 18.9. Recreational and shared use paths shall have a lateral clearance of 1m (500mm minimum) between any object and the edge of the path. Refer to AP 11.14/99, Bicycles (Appendix A).
- 18.10. Pedestrian paths may intersect at any angle, subject to sightlines and safety aspects.
- 18.11. Road paving at path crossing points shall not be highlighted with colour, different paving, and texture or by any other means unless the crossing is a zebra crossing approved by Main Roads Western Australia (MRWA).

- 18.12. Where tactile paving is to be installed, preference shall be given to the use of adhesive type Tactile paving. Refer to STD 60-1s-H (Appendix A) and AS/NZS 1428.4:2002, Design for Access & Mobility – Tactile Indicators.
- 18.13. Mixed media paths and hardstands, including oxide treatments, exposed aggregate, and multiple unit paver styles are not encouraged. Paths should be fit for purpose, cost effective and minimise maintenance.
- 18.14. Where unit paving is being installed as the path material or as an edge restraint, its concrete footing shall not extend beyond the outside edge of the unit paver.
- 18.15. The use of aggregate, stone or other hard material shall only be used if it is permanently fixed in place with concrete, adhesive or other approved product.
- 18.16. Paths within public access ways are preferred to be 2.0m wide (1.5m minimum), with the balance of the width to be planted or paved in the same or different material to the main path.

Public Open Space

- 18.17. Paths within POS shall be a minimum 2.0m wide, with designated shared use paths to be a minimum 2.0m wide.
- 18.18. Paved access for maintenance and emergency vehicles shall be provided to all POS and be constructed in accordance with the City's Crossover Specifications, secured with a post and chain lockable gate. Refer to STD 21-1s-F, STD 21-2s-E and STD 58-2s-C, all in Appendix A.

Verge

- 18.19. Crossovers and other City approved paving to verge areas shall be to the following City Standards
- STD 21-1s-F
 - STD 21-2s-E
 - STD 21-3s-F
 - STD 21-4s-C
 - STD 27-1s-D
 - STD 29-1s-C
 - STD 29-2s-C
 - STD 29-3s-C
 - STD 29-4s-C
 - STD 40-2s-C
 - STD 47-2s-D
 - STD 75-1s-C

Median

- 18.20. All medians less than 3.0m in width between face of kerbs shall be paved.
- 18.21. All medians and islands within 15.0m of an intersection and other median openings shall be paved.

18.22. Medians greater than 3.0m in width, between face of kerbs shall have a 1.2m minimum width of paving abutting the kerb with the balance of the median width to be paved, mulched or planted subject to these Landscape Guidelines.

Roundabouts

18.23. A 2.0m wide minimum paved area to face of kerb shall be installed within a roundabout, with the balance of the roundabout to be either paved and/or planted.

18.24. Walls or other structures shall not be permitted within roundabouts.

19. Play Spaces

The application of these Guidelines will ensure the provision of a diverse range of age appropriate, quality Play Spaces whilst maintaining the most effective use of resources.

Play Spaces need to be considered as a complete package within any precinct and prior to their design, the intended function and hierarchical classification of each site must be determined. This detail will be required to accompany any landscape plans incorporating proposed play spaces.

For a detailed explanation of the concepts associated with the design of play spaces refer to the City of Swan Play Space Strategy.

Site choice

19.1. The age appropriateness and the level / quantity of play opportunities shall be relevant to the functionality and hierarchical classification of the site.

19.2. Play opportunities shall complement others provided within the same precinct in terms of age appropriateness and variety.

Site design

19.3. Play opportunities, supporting amenity and landscape elements shall be designed as a whole, to maximise the usefulness of each and obtain the best value from the relationships between them.

19.4. Play opportunities shall be located in one general area to enable ease of supervision by carers.

19.5. Play opportunities shall not be placed within close proximity to private fences or hazards such as busy roads or water bodies.

19.6. Play opportunities shall allow for informal surveillance.

19.7. Play equipment, surrounds and soft fall shall comply with Australian Standards or Best Practice. Refer to AS 4685 2004: parts 1 to 6; AS/NZS 4486 1997; AS/NZS 4422 1996 and any other relevant standards.

- 19.8. Play areas with sand as a soft fall shall be enclosed by a concrete or limestone edge restraint. Refer to STD 84-2s in Appendix A.
- 19.9. Gingin Quartz sand shall be used in play areas located in wind affected sites.
- 19.10. Combinations of play opportunities shall be offered, eg hiding, balancing, climbing, moveable structures, fixed structures, spinning etc.
- 19.11. It is desirable for natural landscape elements to be retained and incorporated within play opportunities.
- 19.12. Access for people with disabilities shall be provided to all play spaces.
- 19.13. The provision of non-equipment play opportunities is desirable.
- 19.14. All play spaces shall have functional shade provided, with a preference for mature trees or steel shade structures.
- 19.15. Seating shall be provided adjacent key play opportunities to enable maximum supervision of children.
- 19.16. Any custom designed play equipment shall require an approved safety audit, detailed maintenance requirements, lifecycle estimates, building licence and structural certification by an accredited engineer.

20. Other Infrastructure

The purpose of these provisions is to ensure that other infrastructure in POS is provided to meet functional requirements and enhance the use of the POS, whilst minimising risk to public safety and providing for cost-effective maintenance.

Structures

- 20.1. All retaining structures greater than 500mm high shall require a building licence and structural certification by an accredited engineer.
- 20.2. All free standing structures greater than 1000mm high shall require a building licence and structural certification by an accredited engineer.
- 20.3. Structural elements such as boardwalks, decking, seating, gazebos, arbours etc shall be constructed of either steel, recycled plastic or masonry products.
- 20.4. No structure may be constructed of timber products, except for Tanalith-E treated pine bollards.
- 20.5. A clearance height of 2.4m minimum shall be required between finished ground/paving surface and any part of an overhead structure such as a gazebo, arbour, vehicle or pedestrian underpass, etc.

- 20.6. Structures that provide pedestrian or vehicle movement through them, such as a gazebo, arbour, vehicle or pedestrian underpass, etc shall have a 300mm minimum clearance between each support and the closest edge of the access way.
- 20.7. For designated shared use paths and cycleways, a desired lateral clearance of 1.0m (500mm minimum) shall be required to posts or other supports for structures and other objects. Refer to AP 11.14/99, Bicycles.
- 20.8. Roofed structures shall have hard surfacing on the ground extending a minimum of 300mm beyond all parts of the eave line.
- 20.9. Internal spaces of structures to be used by the public shall be paved or concreted.
- 20.10. Steps shall comply with the following requirements:
- Riser dimension range: 115mm minimum to 190mm maximum.
 - Going (tread) dimension range: 250mm minimum to 355mm maximum.
 - Ideal step dimensions are Riser 150mm and Going 280mm.
 - Steps shall not have more than 18 Risers in any one flight.
 - A contrasting coloured strip, not less than 50mm and not greater than 75mm shall be provided on the Going at the nosing with a minimum luminance contrast of 30% to the background.
- 20.11. Handrails shall be provided to at least one side of any steps with a 180 degree return on each end of rail.
- 20.12. Ramps shall be edged with a raised kerb and be installed to Australian Standard AS1428-1.
- 20.13. Shade structures shall exclude the use of shade sails/textiles and shall be designed to minimise vandalism and also prevent climbing onto the structure.
- 20.14. Bridges, boardwalks and viewing platforms that are not associated with a natural or drainage water body will not be accepted by the City.
- 20.15. Estate entry statements are not to be located within POS. They shall be located within private property.

Public art

- 20.16. In accordance with the City's Policy POL-C-142 – 'Public Art', the City encourages the provision of approved public art within POS, streetscapes and other public spaces.
- 20.17. The locations and scale of public art, particularly within streetscapes and other situations where pedestrian/vehicle conflicts may occur, shall ensure appropriate set backs and sight lines are achieved.

Rubbish Bins

- 20.18. Preference shall be given to the use of metal or recycled plastic 120 litre bins.
- 20.19. Alternative bin types will be considered incorporating design features that consist of concave hinged top painted metal, with removable inner metal lining having drainage holes in the bottom, fixed to a single leg support and no lock.
- 20.20. Suitable poles, bags and signage for standard type dog bins shall be provided by the City.

Bollards

- 20.21. Preference shall be given to the use of 'Tanalith E' treated pine or other plantation timbers or recycled plastic. Refer to STD 39-1s-F (Appendix A).
- 20.22. Bollards shall be located on the property boundary or, where appropriate, aligned with peripheral tree planting.
- 20.23. Where possible, bollards shall not be placed in grass areas, with suitable alternatives being the location in planting beds or set into a paved mowing edge. Refer to STD 39-1s-F (Appendix A).
- 20.24. Bollards shall be spaced at a maximum of 1.5m centres.

Lighting

- 20.25. Lighting will be required to be incorporated into POS designs.
- 20.26. All lighting for parks, hard courts, ovals, etc. shall be in accordance with AS 1158.3.1:1999, Public Lighting Code.
- 20.27. Where possible, the selection of lighting shall be from the normal and decorative range provided by Western Power or alternative as approved by the City.
- 20.28. Within POS lights shall be on 6.0m poles, with screw type globe fittings and metal mesh grill or to alternative design as approved by the City.
- 20.29. All lights within a POS are to be controlled by one dedicated timer, to control anti-social behaviour.
- 20.30. Bollard lighting will not be accepted by the City.

20.31. Uplighting shall be flush-mounted with vandal resistant glass.

Fencing

20.32. No brush wood or other timber products (eg: pine lap style) shall be used on road reserve boundaries.

20.33. Private boundary fencing fronting POS shall be designed to allow surveillance.

Furniture

20.34. All park and POS furniture is to be constructed of either steel, aluminium or recycled plastic.

20.35. Drinking fountains shall be included adjacent to play spaces and considered for POS areas.

20.36. Drinking fountains shall be installed with an isolating valve in an accessible valve box located close to the fountain.

20.37. Seats and shade shall be considered for play areas and/or along paths within POS.

20.38. All seats, tables and benches shall be set in a hard stand area. Refer to STD 76-1s, STD 76-2s, and STD 76-3s in Appendix A.

20.39. Barbeques shall be provided with appropriate drainage and soak wells, as approved by the City, to dispose of collected rainfall from the fat trap.

21. Plantings

The intent of these provisions is to ensure that planting takes advantage of and complements any naturally occurring flora, minimises water use and on-going maintenance costs and provides a safe and attractive environment for pedestrians and users of POS.

General

21.1. Dial 1100 for Dial before You Dig or go on line to www.dialbeforeyoudig.com.au.

21.2. The retention and enhancement of naturally occurring native vegetation is encouraged, particularly in rural areas where native vegetation is more common.

21.3. All plant species shall require City of Swan approval.

21.4. Plant species shall be selected to minimise water, fertiliser and on-going maintenance, with the use of local native species being preferred. Extensive garden beds with high maintenance plants (eg roses, azaleas, annuals, hedging, topiary) are not permitted.

21.5. Planting design and species selection shall not impede sight lines for motorists and shall be in accordance with MRWA and City standards.

- 21.6. Planting within public access ways shall generally be of low shrubs and/or groundcovers in order to ensure surveillance over the full length of the PAW.
- 21.7. Groundcovers or shrubs shall be planted greater than 500mm away from a path, driveway, public service facility or any other structural element within the verge.
- 21.8. Whenever possible, planting, even with irrigation, shall be undertaken during the months May to September.
- 21.9. All plantings shall be mulched with tub ground plantation pine, recyclable green waste older than 15 months or another type of mulch as approved by the City.
- 21.10. Mulch shall be placed to a minimum depth of 75mm.
- 21.11. Peat moss shall not be used in any mulch application.

Public Open Space

- 21.12. All garden beds and/or mass planted areas shall be enclosed by a paved edging of concrete, limestone blocks or other approved material with a minimum dimension of 200mm x 200mm. Refer to STD 84-1s.
- 21.13. The alignment of garden or mass planted edging adjacent to grass shall be such as to provide an adequate radii that suits a 1.8m deck ride-on mower.
- 21.14. Planting layouts within mass plantings shall generally have low plants to the front and taller types to the back or middle, with consideration to allowing views through for surveillance purposes.

Verge

- 21.15. For verge widths less than 6.5m, shrubs and groundcovers that grow to a maximum height of 500mm at maturity may be used. Refer to STD 83-2s, STD 88-3s and STD 88-4s.
- 21.16. For verge widths greater than 6.5m but less than 8.5m, shrubs and groundcovers that grow to a maximum height of 500mm at maturity may be used within 6.5m of the kerb and up to 1.5m high at maturity for the remaining verge width, subject to not obstructing sight lines and/or creating security hazards for pedestrians and motorists.
- 21.17. For verge widths greater than 8.5m, shrubs and groundcovers that grow to a maximum height of 500mm at maturity may be used within 6.5m of the kerb, then up to 1.5m high for the next 2.0m and up to 3m high at maturity for the remaining width, subject to not obstructing sight lines and/or creating security hazards for pedestrians and motorists.
- 21.18. For verges that do not have a path, a clear zone consolidated with grass, mulch or other approved material to a minimum width of 1.5m shall be required over the length of the verge for public access. Refer to STD 88-2s.

21.19. In local residential streets irrigated turf and/or native plantings are permitted provided that they do not require City watering or maintenance beyond the 2-year establishment period.

Medians

21.20. Plantings shall be setback 2m minimum from back of kerb or 1.5 from shoulder or, where there is no kerb or shoulder, from the closest driving edge.

21.21. Plants that grow to a maximum height of 500mm at maturity are permissible within 5.0m of a pedestrian opening.

Roundabouts

21.22. Species selection and location of plants shall ensure that views of the motorist through the roundabout in all directions are not obstructed by any plants. Refer to AP 11.6/93, Section 4.2.7.

22. Trees

The intent of these Guidelines is to ensure that trees are chosen to reflect the local character and conditions and provide attractive streetscapes and public amenity in the form of shade, improved micro-climate and landscape amenity, and to ensure that trees do not interfere with lighting, paving or other public infrastructure.

General

- 22.1. Dial 1100 for Dial before You Dig or go on line to www.dialbeforeyoudig.com.au.
- 22.2. Local native tree species are preferred.
- 22.3. Tree plantings in roads controlled by MRWA shall comply with MRWA standards.
- 22.4. Trees shall generally be planted greater than 8 metres from a street light, with a closer location subject to species selection and City approval.
- 22.5. Trees proposed for planting within 1.8m of paving shall require an approved root control barrier.
- 22.6. Trees shall be planted greater than 1.8m from the driving edge or face of a kerb.
- 22.7. Trees shall be 45 litres minimum with 100 litres preferred, with tube stock being suitable for mass plantings.
- 22.8. The use of deciduous trees is discouraged within 100m of any natural waterway and/or wetland.
- 22.9. Refer to STD 87-1s for tree planting details (Appendix A).

Parks

- 22.10. Trees shall be planted further than 5.0m from ornamental lights unless uprights are used.
- 22.11. Trees shall be located within mass planted areas wherever possible.
- 22.12. Where trees are located within grass areas, their spacing shall be greater than 3.0m to allow ride-on mowing maintenance between each tree.
- 22.13. Where mature trees are retained in POS as part of an urban development, they shall not be closer than 10m to any existing or proposed buildings or dwellings.

Verge

- 22.14. Street trees shall be planted at greater than 8.0m spacings with generally one tree per property frontage and two or three trees per side verge, subject to width and length of verge.
- 22.15. Trees shall be planted greater than 3.0m from private boundaries.
- 22.16. Trees shall not be planted within 3.5m of a cross-over, power pole, sign, fire hydrant, public service inspection pit, overhead wires leading into a property, bus stop or any other structural element.
- 22.17. For corner properties, trees shall not be permitted within 12.0m of the intersecting kerbs. Refer to STD 88-1s (Appendix A).

Medians

- 22.18. Tree planting shall not be permitted within 15.0m of an intersection.
- 22.19. Tree planting in medians controlled by the City that are less than 4.0m in width may be considered.
- 22.20. Medians greater than 4m in width may have appropriate tree species centred in the middle of the median at a minimum longitudinal spacing of 6m for City controlled roads.
- 22.21. Trees planted in medians with flush kerbs shall have approved bollards with reflective tape

Roundabouts

- 22.22. One single stem tree to a maximum height of 8.0m at maturity may be permissible centrally placed in roundabouts up to 10.0m diameter.
- 22.23. For roundabouts greater than 10m in diameter, trees that grow greater than 8m in height at maturity may be permissible within the central portion, subject to approval.

23. Turf and Grass

The intent of these Guidelines is to ensure that grassed areas are provided in appropriate locations that are useable by the public and complementary to landscape design, whilst providing for cost-effective maintenance and avoiding small, inaccessible areas that are difficult or time-consuming to maintain.

Turf

- 23.1. Dial 1100 for Dial before You Dig or go on line to www.dialbeforeyoudig.com.au.
- 23.2. Gradients shall be equal to or flatter than 1: 6.
- 23.3. Grass areas shall be greater than 3.0m wide and 3.0m long, with sizes and shapes to be practical for purpose.
- 23.4. Designs shall provide for areas to be accessible by a 1.8m ride on mower and to allow for a turning circle of 3.0m radius around any trees, structures or furniture.
- 23.5. Within POS, each area of grass shall have ride on mower connectivity, without having to go on to the adjacent roads.
- 23.6. Each grass area shall be bounded by a road or garden kerb, path or other approved solid material.
- 23.7. Park design is to minimise the extent of turf edging by avoiding use of winding pathways.
- 23.8. POS is to be irrigated using hydro zoning principles to match water usage with the proposed purpose landscaping or turf.
- 23.9. Pennisetum clandestinum (kikuyu) is the preferred grass species for POS.
- 23.10. Pennisetum clandestinum (kikuyu) shall be installed by roll on turf or by stolons at a minimum density of 1:10 per metre square.
- 23.11. Where proposed grass areas are within 15m of a natural waterway and/or wetland, Bush Forever Site and/or other area of environmental significance, a continuous root barrier to a minimum depth of 700mm shall be used under and contiguous with the mowing and/or planting edge material.
- 23.12. Grass shall not be installed within public access ways less than 5.0m in width.
- 23.13. All grass to be installed in POS is to be tested for and certified as being sting nematode free prior to installation.

Native or ornamental grass

- 23.14. Where suitable to the purpose, native (e.g. Sporobolus virginicus – Native couch) or ornamental grasses may be substituted for lawn grasses.

23.15. Native or ornamental grass proposed for verges shall be selected to grow to a maximum height of 500mm at maturity and/or maintainable to that height.

24. Maintenance

The intent of these Guidelines is to provide for the proper evaluation of maintenance programs and costs to ensure that any initial maintenance issues are addressed prior to Handover of infrastructure to the City.

General

- 24.1. A detailed maintenance program shall be submitted for consideration and approval by the City prior to construction.
- 24.2. The maintenance program shall include a nutrient management plan, detail on intended water use, types of fertiliser and herbicides, mowing frequency and heights and a maintenance schedule for all irrigation equipment.
- 24.3. An initial soil and water analysis shall be undertaken prior to grass establishment to provide details on fertiliser requirements.

Maintenance Period to Handover

- 24.4. Maintenance by the Developer of a streetscape or POS installed by the Developer is for a minimum of 2 years. In line with Table 1 Embellishment and Amenities Matrix in Appendix B, the inclusion of certain items will require an extended maintenance period of 3 or 5 years. These items are so included because they have an increased maintenance demand and chance of failure and therefore an extended time period is required to ensure the City is not burdened with failed infrastructure or landscaping. Where such items are to be installed in new POS, that entire park is to be maintained for the extended period.
- 24.5. Bi-annual inspections of all infrastructures are to be carried out by the Developer with City staff during the maintenance period to ensure adherence to functionality and safety conditions.
- 24.6. The Developer shall be responsible for minuting each inspection discussion, with an electronic copy to be provided to the City's representative within 3 working days of each inspection.
- 24.7. Soil, water and tissue analysis for determining ongoing fertiliser and nutrient requirements for plants and grass shall be conducted at the end of the first maintenance year and immediately prior to handover. The report that is generated is to be provided electronically to the City within 14 days of the samplings.
- 24.8. City of Swan representatives are to be involved at the time of Practical Completion of any newly installed landscaping so that a proposed Handover date can be set.

Appendix A: Standard Drawings

Crossover Concrete – Barrier/Semi-mountable kerb	STD 21-1s - F
Crossover Concrete – Mountable kerb	STD 21-2s - E
Crossover Brick – Barrier / Semi-mountable kerb	STD 21-3s - F
Crossover Brick Laying Patterns	STD 21-4s - C
Kerb Types	STD 24-1s - E
Flush Kerb	STD 24-2s - A
Crossover location in relation to side entry gully	STD 27-1s - D
Driveway gradient: Maximum Carport Level and Driveway Gradient for Verges at 2% Gradient only	STD 29-1s-C
Driveway gradient: Maximum Carport Level and Driveway Gradient for Verges Exceeding 2% Gradient only	STD 29-2s-C
Driveway gradient: Minimum Carport Level and Driveway Gradient for Verges at 2% Gradient only	STD 29-3s-C
Driveway gradient: Minimum Carport Level and Driveway Gradient for Verges at less than 2% Gradient only	STD 29-4s-C
Bollard Fencing	STD 39-1s-F
Brick Paving Edge restraint	STD 40-2s-C
Crossover - Brick Paved and Concrete in Rural Areas	STD 47-2s-D
Chain and post gate fencing	STD 58-2s-C
Pram ramp – 3 Plane	STD 60-1s-H
Crossover Locations corner lots – Local streets only	STD 75-1s-C
Minimum paving requirements for Universal Access to bench seats	STD 76-1s
Typical Seating Installation	STD 76-2s
Typical Table Installation	STD 76-3s
Garden kerb / Edge Restraint	STD 84-1s
Edge restraint to Playground Sandpit	STD 84-2s
Typical Street Tree Planting	STD 87-1s
Typical Tree Planting in Pedestrian Paving	STD 87-2s
Typical Tree Planting in Car Bays	STD 87-3s
Typical Tree Planting in Paved verge – Linear Root Control Barriers	STD 87-4s
Verge Tree Restrictions for Corner Properties	STD 88-1s
Verge Landscaping (No Path)	STD 88-2s
Verge Landscaping (Path against Kerb)	STD 88-3s
Verge Landscaping (Path against boundary)	STD 88-4s
Planting within Car Parks	STD 90-1s
Paths within Parks	STD 100-1s

Appendix B: Amenities and Embellishment Matrix

Table 1 in this Appendix provides a *maximum* standard of public open space amenities and embellishment. The level of embellishment and amenities is related to the function (hierarchy) and purpose (classification) of the park. The matrix will be used in the consideration of new public open spaces and in redevelopment or renewal of existing parks.

Permitted/Not Permitted

In addition to the amenities in Table 1, the following amenities and embellishments **are permitted** in all classes of public open space:

- Universal access / dual-use paths
- Parks seating (including slab);
- Shelter/gazebo;
- Table settings;
- Rubbish bins;
- Park lighting;
- Fencing, bollards or edging;
- Drinking foundation;
- Fitness equipment; and
- Estate entry statements within private property.

The following embellishments **are not permitted** in any public open space. Where they already exist in POS the City reserves the right to remove them:

- Shade sails;
- Bollard lighting;
- New water bodies that do not serve a drainage function; and
- Bridges, boardwalks and viewing platforms that are not associated with a natural or drainage water body.

Maintenance Period

The items marked '❖' or '♦' in Table 1 will require an extended maintenance period of 3 or 5 years. These items are so included because they have an increased maintenance demand and chance of failure and therefore an extended time period is required to ensure the City is not burdened with failed infrastructure or landscaping. Where such items are to be installed in new open spaces, that entire park is to be maintained for the extended period.

The justification for the extended period is outlined for each item as follows:

- Relocated mature trees (3 years) - high risk of tree death during the first three years after relocation.
- Drainage - bubble up in landscaping (3 years) – need three winters to ensure it has been installed and is functioning correctly.

- Bridges/boardwalks/viewing platforms (3 years) – ensure that the design and construction is durable and fit for purpose.
- Filtration plants, mechanical aeration pumps or recirculating pumps (5 years) – have high operating, maintenance and renewal costs.
- Drainage - permanent/semi-permanent water body (5 years) - a 5 year period is required to ensure they are functioning as planned. Past issues have included algae blooms, mosquitos, toxicity and public health impacts.
- Artworks (5 years) – There have been past issues with the durability of artworks.

Barbeques

The City receives many requests from developers and local residents to install one or multiple barbeques in public open space. However in many locations these are rarely used and become a maintenance issue. Barbeques are suited to long stay public open space and as such the City will only support their inclusion in some Neighbourhood, District and Regional open spaces. Their provision in these POS spaces is subject to consideration of the:

- Proximity to existing barbeques;
- Target demographic (eg families); and
- Public open space principles of Sustainability, Access and Equity, and Financial Responsibility.

Public Toilets

The City provides public toilet facilities in some locations to improve the amenity and enjoyment of that public open space. Toilets have a high maintenance cost and renewal liability for the City. Toilets are suited to long stay, high activity public open space and as such the City will only support their inclusion in some Neighbourhood, District and Regional open spaces. The provision of new public toilets needs to be considered on its merit with reference to the:

- Proximity to other public toilet facilities (including those associated with commercial and community premises);
- Number of potential users and the normal length of their stay;
- Target demographic (eg young families or the elderly); and
- Open space principles of Sustainability, Access and Equity, and Financial Responsibility.

Table 1 – Maximum Public Open Space Amenities and Embellishment Standard

			Embellishment																	
			Playground		Picnic	Landscape Works										General				
Park Hierarchy	Classification	Land Size	Playground Setting (large 6+ activities)	Playground Setting (small - 4 activities)	BBQ	Landscaping/Planting Beds	Turfing	New tree plantings	Relocated mature trees	Filtration plants, mechanical aeration pumps or recirculating pumps	Bore Supply and Equipment	Drainage - bubble up in grass	Drainage - bubble up in landscaping	Drainage - water body	Bridges/boardwalks/viewing platforms	Public toilets	Artworks	Bicycle parking	On Reserve Car parking	
Local	Recreation - Level 1	0.3ha - 1ha		✓		✓	✓	✓	◆	◆	✓	✓	◆		◆					
	Recreation - Level 2		✓			✓	✓	✓	◆	◆	✓	✓	◆	◆	◆			◆		
	Environment															◆				
Neighbourhood	Recreation	1ha - 5ha	✓		✓	✓	✓	◆	◆	◆	✓	✓	◆	◆	◆	✓	◆	✓	✓	
	Sporting	3ha - 5ha	✓			✓	✓			◆	✓	✓					◆	✓	✓	
	Environment	1ha - 5ha													◆				✓	
District	Recreation	5ha - 25ha	✓		✓	✓	✓	◆	◆	◆	✓	✓	◆	◆	◆	✓	◆	✓	✓	
	Sporting	15ha+	✓			✓	✓			◆	✓	✓					◆	✓	✓	
	Environment	5ha - 25ha			✓										◆	✓			✓	
Regional	Sporting, Recreation & Environment	n/a	Embellishment to be determined on a case by case basis dependant on size, context and function																	

Appendix C: Documentation Checklist

1. Landscape information for Development Approval shall generally be presented and discussed with City staff at three different Stages; Conceptual, Preliminary and Final Design.
2. Conceptual Drawings shall include:
 - Preliminary Site analysis information; and
 - Conceptual designs.
3. The Final Design Package shall include:
 - Final designs;
 - Final management plans for remnant native vegetation, grass, shrubs, groundcovers, trees, play equipment, structures, proposed water use
 - Irrigation drawings with complete details of all materials, sizes, location of lines, sprinklers and other equipment, including locations of solenoids;
 - Documentation of bore license and construction details; and
 - Landscaping maintenance schedule for establishment and ongoing maintenance.
4. All submitted drawings shall include:
 - Locality map;
 - Legend;
 - North point;
 - Title block;
 - Scale;
 - Date;
 - Road names or other means of identifying location of the site,
 - Drainage infrastructure, and
 - Street & park lighting.
5. Final drawings shall include the requirements listed in Item 4 and the following where appropriate:
 - Plant species;
 - Grass species;
 - Paving details;
 - Furniture details; and
 - Irrigation plans.

Appendix D: Reference Documents

Environmental Weeds of the Eastern Hills Region, Wooroloo Brook Land Conservation District Committee, 2002.

Flooding in Western Australia, Water Facts 13, Water and Rivers Commission, July 2000.

Floodplain Management, Water Facts 14 , Water and Rivers Commission, July 2000.

Land-based Ecosystems 5, Land and Water Resources, Research and Development Corporation, November 1996.

Liveable Neighbourhoods, A Western Australian Government Sustainable Cities Initiative, Western Australian Planning Commission, Perth, June 2000.

Liveable Neighbourhoods, Street Layout, Design and Traffic Management Guidelines, Western Australian Planning Commission, Perth, June 2000.

Low Allergen Gardens, Helpful Hints for People with Asthma, Asthma South Australia.

Managing Riparian Land 1, Land and Water Resources, Research and Development Corporation, November 1996.

Managing Snags in Rivers 7, Land and Water Resources, Research and Development Corporation, February 1998.

Managing Stock 6, Land and Water Resources, Research and Development Corporation, November 1996.

Riparian Land Management Technical Guidelines, Volume One, Part A: Principals of Sound Management and Part B: Review of Legislation Relating to Riparian Management, Land and Water Resources, Research and Development Corporation, November 1999.

Riparian Land Management Technical Guidelines, Volume Two, On-ground Management Tools and Techniques, Land and Water Resources, Research and Development Corporation, November 1999.

River and Estuary Landscape Appreciation and Protection, Sediment in Streams, Livestock Management: Fence Location and Grazing Control, Flood Proof Fencing for Waterways, Rushes and Sedges, Importance of Large Woody Debris in Sandy Bed Streams, Water Notes WN16 to WN21 inclusive, Water and Rivers Commission, July 2000.

River Ecosystems 4, Land and Water Resources, Research and Development Corporation, November 1996.

Stream bank Stability 2, Land and Water Resources, Research and Development Corporation, November 1996.

Water Conservation Through Good Design, Western Australian Water Resources Council, Perth, November 1986.

Water Notes WN3 to WN15 inclusive, Water and Rivers Commission, January 2000.

Water Quality 3, Land and Water Resources, Research and Development Corporation, November 1996.

Waterwise Guide to New Gardens, Water Corporation / Waterwise Western Australia, February 1999.

Weed Identification Guide, City of Swan.

Western Weeds, A Guide to the Weeds of Western Australia, Plant Protection Society of Western Australia, 1997.

Wetlands and Weeds, Wetlands and Fire, Water Notes WN1 and WN2, Water and Rivers Commission, July 2000.

City of Swan Policies

The following City Policies, which have been referred to in this document can be obtained by contacting Customer Services on 9267-9267:

- City of Swan Public Art Policy POL- C- 142
- Cultural Heritage Significance and Development Approval, Policy No.POL-C-049, City of Swan, July 2001;
- Interpretation of Watercourses and Wetlands, Policy No. POL-C-063, City of Swan, August 2002;
- Outline Development Plan, Policy No. POL-C-056, City of Swan, December 2001;
- Parks and Playgrounds, District and Neighbourhood, Policy C9.2 (*Subject to Review*), City of Swan, June 2001;
- Private Development within City Road Reserves, Policy No. POL-C-058, City of Swan, May 2002;
- Residential Lots Abutting Roads Carrying More than 3000 Vehicles Per Day, Policy E13.10 (*Subject to Review*), Shire of Swan, January 1992;
- Rural Subdivision Revegetation, Policy No. POL-C-060, City of Swan, May 2002; and
- Town Planning and Development Scheme, No 9.

Specifications and Manuals

The following specifications and manuals referred to in this document, can be obtained by contacting Customer Services on 9267-9267 or online at www.cityofswan.com.au:

- The City of Swan Irrigation Specification consists of:
 - City of Swan specification for irrigation controllers and sensors.
 - Bore construction specification.
 - Section 'H' headworks.
 - Irrigation system specification.
 - Electrical / cubical specification.
 - Supply and installation of a submersible pump.
- City of Swan Play Space Strategy.

Australian, New Zealand and Austroads Standards

The following Standards referred to in this document are available from Standards Australia (AS) on www.standards.com.au and AUSTROADS Publications (AP) on www.austroads.com.au:

- AP 11.6/93, Section 4.2.7;
- AP 11.14/99
- AS 1428 Design for Access and Mobility, Parts 1, 2, 3 and 4.
- AS 2155:1982;
- AS 2124:1992;
- AS/NZS 4422:1996