



Landscape Guidelines: Streetscapes and Open Space

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Foreword

The City of Swan (City) 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 open space developments create a strong physical image for the City and have aesthetic, social and economic value for the community. Streetscapes and open spaces help to reinforce the identity of a place, provide facilities for 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 ensure that open spaces are attractive, functional and cost-effective to maintain.

For the purposes of the Landscape Guidelines (*Guidelines*) open space includes streetscapes, medians, road reserves, public open spaces (POS) and parks, public access ways (PAW) 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 residential, commercial and industrial properties. These are usually landscaped by owners or tenants.

Section B - refers to open space 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

Scope of the Guidelines

1. These *Guidelines* apply to all landscape proposals for development of open space 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.
2. For development of open space, 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.
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).
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.
5. The *Guidelines* will also apply to any Application for Development Approval for landscaping works on existing open space by developers or City staff.
6. The *Guidelines* are to be read in conjunction with other City of Swan policies, guidelines and specifications available on the City's website www.swan.wa.gov.au and upon request from the City's Parks and Landscaping Officer, including, but not limited to:
 - Standards of Provision: Open Space and Community Buildings
 - Irrigation Specification
 - Tree Planting Guide
 - Public Art Policy POL-C-142
 - City of Swan Play Space Strategy
 - Tree Protection, Planting, Pruning, Removal & Maintenance Guideline

Principles

The *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.

7. Sustainability

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

8. Quality and enjoyment

Open space design should enhance the physical quality and appearance of public places, helping to reinforce a place's identity and making it a more attractive environment for people to gather and interact with each other. Open spaces that are inviting and enjoyable can attract more people and more frequent use, thus having a greater impact on community health. Decisions made in line with these *Guidelines* should continue delivering good quality streetscapes and open spaces that people will safely enjoy using.

9. Diversity, flexibility and innovation

The City recognises the diversity of places that it manages and is mindful of the importance of open spaces in creating a sense of place and belonging. It aims to provide a diverse range of experiences and opportunities in streetscapes and open spaces 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.

10. Access and equity

A range of open spaces of different size and function should be accessible to all of the City's residents and visitors. There should be an equitable distribution of open space in terms of the amount, condition, and amenity across the City so that locations, user groups or segments of the community are not disadvantaged. All user groups and community members should be equally considered in the design and development of open spaces. There is a responsibility to consider intergenerational equity and ensure fit-for-purpose open spaces are available for future generations.

11. Financial responsibility

The City must be accountable and responsible for its use of public funds and assets. The provision and maintenance of open space must represent an efficient use of resources through cost-effective design and operation. An appropriate balance between full life cycle cost and community benefit must be achieved.

12. Integration

Open spaces should be integrated with the urban and natural environment in recognition that it does not operate in isolation with 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 enhances and compliments the open space.

13. Consultation and collaboration

Consultation is an important element when developing an open space. All relevant stakeholders and community groups should be consulted to ensure the best outcome is achieved.

14. Safety

For a place to function effectively it must be safe. Elements that must be considered include the design and location of open space, as well as the embellishments within them. Natural surveillance should be enhanced by locating facilities in active and accessible locations.

Objectives of the Guidelines

These *Guidelines* provide a set of performance criteria and standards for provision of open space with a number of prime objectives being to:

15. Provide a consistent process for review and approval of designs in keeping with specific landscape requirements and City policy.
16. Ensure the design process takes into account local character and existing conditions.
17. Encourage the functional retention and enhancement of naturally occurring vegetation and other natural features.
18. Provide for the needs of the community by ensuring that open space is functional, accessible and safe for its intended purpose.
19. 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.
20. Encourage the use of local native plant species, drought tolerant exotic species and water wise garden designs.
21. Minimise requirements for irrigation and fertilisers.

Any variation from these *Guidelines* will be subject to the written approval of the City 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

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 are encouraged to stabilise and maintain the verge adjacent to their property, including any side verges for corner properties.

Preferred landscape treatments to verges include the retention of naturally occurring native vegetation, grass, groundcovers and/or organic mulch, with or without irrigation. Permissible landscape treatments may include Paving, Synthetic Turf or Compact Aggregate, subject to the City's Approval.

Irrigation

22. The City of Swan Irrigation System Specification is available on City's website www.swan.wa.gov.au and shall be used as a reference document for all irrigation details.
23. The City's electrical requirements are available upon request from the City's Parks and Landscaping Officer.
24. Dial 1100 for Dial before You Dig or go on line prior to any works commencing on site. www.dialbeforeyoudig.com.au
25. Water wise design principles must be incorporated into irrigation designs for planting and grass areas.
26. Water usage shall be in accordance with Department of Water legislation, with respect to watering times and hours.
27. Where in-ground irrigation is installed to grassed areas, no part is to protrude above ground level except for pop-up sprinklers during operation.
28. The location and type of spray outlets must be selected to avoid water spray onto roads, crossovers, paths and other paved areas.
29. Irrigation controllers and valves shall be installed within the private property boundary.
30. Lateral pipe work shall be buried a minimum of 300mm below ground level.

31. Mains pipe work shall be buried a minimum of 450mm below ground level.
32. All changes of direction for mains shall have thrust blocks of the appropriate size.

Paving

33. The use of paving as verge treatment other than for paths and crossovers, is not normally encouraged within the City for reasons concerning safety, drainage and aesthetics.
34. For paving to be considered on any portion of the verge, a written application with a detailed plan is to be submitted to the City's Parks and Landscaping Officer. [Application to Alter Verge Form](#) is available from the City's website.

The Applicant is responsible for:

- Installing the paving as per the City's approved detailed plan and Specification For The Construction Of Vehicle Crossovers May 2016 available on the City's website: www.swan.wa.gov.au;
 - Maintaining the paving in a safe and sound condition;
 - Reinstating the paving at the Applicant's costs in the event that any City or government utilities have reason to disturb the paving to work on their infrastructure.
35. There must be at least one opening in the paving for the placement of a tree or garden bed per property frontage and two or three openings in side verges for corner lots, subject to width and length of verge. The opening must be a minimum of 1 metre by 1 metre. This is to allow for rainfall infiltration so that not all the extra water collected by the paved area enters the road drainage system.
 36. Paving must be installed with the finished levels, where possible, collecting the water and making it flow into the tree well(s) or garden beds.

Synthetic turf

37. The use of synthetic turf as verge treatment is not normally encouraged within the City for reasons concerning safety, drainage and aesthetics.
38. For synthetic turf to be considered on any portion of the verge, a written application with a detailed plan is to be submitted to the City's Parks and Landscaping Officer. [Application to Alter Verge Form](#) is available from the City's website.

The Applicant is responsible for:

- Installing the synthetic turf as per the City's approved detailed plan and requirements;
- Maintaining the synthetic turf in a safe and sound condition;

- Reinstating the synthetic turf at the Applicant's costs in the event that any City or government utilities have reason to disturb the synthetic turf to work on their infrastructure.
39. There must be at least one opening in the synthetic turf for the placement of a tree or garden bed per property frontage and two or three openings in side verges for corner lots, subject to width and length of verge. The opening must be a minimum of 1 metre by 1 metre. This is to allow for rainfall infiltration so that not all the extra water collected by the paved area enters the road drainage system.
40. Synthetic turf must be installed with the finished levels, where possible, collecting the water and making it flow into the tree well(s) or garden beds.

Compact Aggregate

41. The use of compact aggregate as verge treatment is not normally encouraged within the City for reasons concerning safety, drainage and aesthetics.
42. For compact aggregate to be considered on any portion of the verge, a written application with a detailed plan is to be submitted to the City's Parks and Landscaping Officer. [Application to Alter Verge Form](#) is available from the City's website.

The Applicant is responsible for:

- Installing the compact aggregate as per the City's approved detailed plan and requirements;
 - Maintaining the compact aggregate in a safe and sound condition;
 - Reinstating the compact aggregate at the Applicant's costs in the event that any City or government utilities have reason to disturb the compact aggregate to work on their infrastructure.
43. There must be at least one opening in the compact aggregate for the placement of a tree or garden bed per property frontage and two or three openings in side verges for corner lots, subject to width and length of verge. The opening must be a minimum of 1 metre by 1 metre. This is to allow for rainfall infiltration so that not all the extra water collected by the paved area enters the road drainage system.
44. Compact aggregate must be installed with the finished levels, where possible, collecting the water and making it flow into the tree well(s) or garden beds.

Structures

45. Walls, letter boxes, seats and other structures must be installed within the private property boundary.
46. 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-J (Concrete Crossover Barrier SM Kerb)

- STD 21-2s-H (Concrete Crossover Mountable Kerb)
- STD 21-3s-H (Brick Paved Crossover)
- STD 21-4s-C (Brick Paving Patterns)
- STD 27-1s-D (Crossover and Side Entry Pit)
- STD 29-1s-D (Driveway Gradient)
- STD 29-2s-C (Driveway Gradient)
- STD 29-3s-D (Driveway Gradient)
- STD 29-4s-C (Driveway Gradient)
- STD 40-2s-C (Brick Paving Edge Restraint)
- STD 47-2s-G (Crossover Standard Brick Paved & Concrete in Rural Areas)
- STD 75-1s-C (Crossover Locations)

47. Steps shall comply with the following requirements;

- Steps and associated handrails and tactile indicators shall be designed and constructed in accordance with AS 1428, Design for Access & Mobility
- 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.

Shrubs and Groundcovers

48. The retention, enhancement or re-establishment of naturally occurring native vegetation is encouraged.
49. 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.
50. 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 Appendix A Standard Drawings:
- STD 88-3s (Verge Landscaping Path Against Kerb)
 - STD 88-4s (Verge Landscaping Path Adjacent to Boundary)
51. 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.
52. 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.
53. 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 Appendix A Standard Drawings:

- STD 88-2s-A (Verge Landscaping-No Path)
54. 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 Appendix A Standard Drawings:
 - STD 84-1s-A (Typical Kerb/Edge Restraint)
 55. Plant species shall be selected to minimise water usage (waterwise species), fertiliser and on-going maintenance, with the use of local native species being preferred.
 56. Whenever possible, planting, even with irrigation, shall be undertaken during the months May to September.
 57. 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.
 58. Mulch shall be placed to a minimum settled depth of 75mm.
 59. Pinebark mulch is preferred for traffic medians due to higher fire resistance.
 60. Peat moss shall not be used in any mulch application.
 61. Mulch is not to be used in foreshore areas.

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.

62. Tree planting shall be in line with the City's Tree Planting Guideline available from the City's website www.swan.wa.gov.au.
63. Tree plantings in roads controlled by Main Roads Western Australia (MRWA) shall comply with MRWA standards.
64. Selection of local native tree species are preferred. Refer to City's Tree Planting Guideline for species selection. Upon request the City will provide the name of appropriate tree species.
65. Dial 1100 for Dial Before You Dig or go on line prior to any works commencing on site. www.dialbeforeyoudig.com.au
66. Trees shall be planted greater than 8.0 metres from a street light, unless otherwise approved by the City.

67. 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.
68. Trees shall be planted greater than 1.8m from the driving edge or face of a kerb or footpath.
69. Trees proposed for planting within 1.8m of kerbs and/or any type of paving require a root control barrier or root director approved by the City.
70. Trees shall not be planted within 3.5m of a crossover, power pole, sign, fire hydrant, public service inspection pit, overhead wires leading into a property, bus stop or any other structural element.
71. For corner properties, trees shall not be permitted within 12.0m of the intersecting kerbs. Refer to Appendix A Standard Drawings:
 - STD 88-1s (Verge Tree Restrictions Corner Properties)
72. Tree planting to verges shall comply with Typical Tree Planting specification. Refer to Appendix A Standard Drawings:
 - STD 87-1s-B (Typical Tree Planting)
73. Where applicable, street trees shall be positioned in the verge within standard alignment (2.4 to 3.0m from lot boundary) as described in the Utility Providers Code of Practice for Western Australia, available from MRWA's website www.mainroads.wa.gov.au
74. Tree wells are to be used for all new tree planting to allow for more concentrated watering and fertilising as well as improved mowing practices.

Notwithstanding the information outlined in these Guidelines, other verge treatments may be acceptable where it can be demonstrated that they do not pose a risk to the community and they do not require any additional maintenance by the City.

Reinstatement Requirements for Service Authorities, Builders and other Contractors

75. Where excavation occurs, the site shall be backfilled at the completion of works and reinstated to a similar or better condition than it was prior to excavation, to the satisfaction of the City of Swan.
76. Where irrigated turf is removed, new roll on turf shall be provided to reinstate the area. Any damage to irrigation shall be repaired to how it was prior to the works and in line with the City's Irrigation Specifications.
77. Where excavation occurs in garden beds, any plants, groundcovers or trees removed must be replaced with an exact or similar species.
78. Where new fill is used, it must be clean and free of debris, rocks and other material that has the potential to be a projectile.

Section B:

Landscape Guidelines for Public Open Spaces, Streetscapes and Developments

Introduction

The intent of this Section is to ensure that the design and landscaping of open space 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 open space, 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 function, 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.

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 tertiary qualification and experience in horticulture or urban design should be engaged to complete the drawings. This will assist in the processing of the submission/application.

The City encourages the involvement of a landscape architect 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*.

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 open space. The matrix contains a sliding scale of provision. Where a higher level of embellishment is requested, this will attract a longer maintenance period (see Appendix B below). The matrix will be applied to new open space and in the redevelopment/renewal of existing open space.

Public Open Space Benchmarks and Criteria

When planning for open space the City utilises a number of benchmarks and criteria which consider the following:

- Size, role and composition of the community infrastructure;
- Access and travel patterns;
- Physical characteristics;
- Local competition; and
- Development trends.

Hierarchy

A hierarchy of provision ensures that appropriate open spaces are provided for distinct catchments, with larger infrastructure serving a larger population, and smaller catering for local needs. Ratios are used to evaluate the number or size of open spaces required across different locations. Benchmarks can either be on a population or distance catchment basis.

79. Regional Open Space (ROS)
 - Defined under a regional or sub-regional structure plan and/or included in a region scheme and set aside for acquisition;
 - ROS serves one or more geographical or social regions and will attract visitors from outside of any one local government area;
 - Size is variable and dependant on function (when sporting space is identified, then elite level functions are required, allocations for playing fields and sports facilities should be 20+ha in area); and
 - Long-stay open space.
80. District Open Space
 - Services several neighbourhoods;
 - Principally designed to provide for formalised organised sport;
 - Typical site size is 5ha to 15+ha;
 - Within 2km or 5 minute drive; and
 - Typically, a long stay open space.
81. Neighbourhood Open Space
 - Services surrounding community;
 - Typical site size is 1ha to 5ha;
 - Within 800m or 10 minutes of safe walking distance; and
 - Typically, a short stay open space unless sport is being played.
82. Local Open Space
 - Services immediate residential population;
 - Typical site size is 0.4 ha to 1ha;
 - Within 400m or 5 minutes of safe walking distance; and
 - Short stay open space.
83. Linear Open Space
 - Long, narrow open space sites that are longer than they are wide;
 - Must be overlooked by adjoining residential lots for at least 50 per cent of their length;
 - Can assist in connectivity, encourage pedestrian movement, provide ecological corridors and opportunities for living streams by retaining key landform features;

- Cannot be credited as open space contribution if classified as restricted open space; and
- Short stay open space.

84. Small Open Space

- Located in close proximity to activity and industrial centres, or within 200 metres of another open space site in order to establish connectivity;
- Typical site size is less than 0.4ha;
- Cannot be credited as open space contribution (may be permitted if open space smaller than 0.4 hectares is classified as unrestricted and can be shown to have a strong community benefit) and
- Short stay open space.

Function

In conjunction with hierarchy, the potential function of open spaces must be considered during the planning phase, to ensure that spaces are designed fit for purpose.

Open space serves a wide range of functions within the urban and rural fabrics of a community. The City uses the categories of recreation, sporting, nature, kick-about and play space when planning and maintaining open space. In practice, many spaces function as two or more of these categories.

85. Recreation Space

- Spaces which enhance physical and mental health through activity that provides relaxation, amusement or stimulation.
- These spaces can be accessed by all to play, socialise, exercise, celebrate or participate in other activities that provide personal satisfaction or intrinsic reward.
- Recreation spaces include gardens and open parklands, amenity spaces, community use facilities, civic commons, or squares.

86. Sporting Space

- Refers to spaces which provide a venue for organised sporting activities such as team competitions, physical skill development and training.
- Sport spaces are designed to accommodate playing surfaces, buffer zones and infrastructure requirements of specific and general sporting activity.
- Players and spectators attend with the express purpose of engaging in organised sporting activity, training or competition or watching the game.
- Most sport spaces can be accessed by community members for informal sport and recreation.

87. Nature Space

- Spaces that provide the opportunity for low-impact recreational activities, such as walking, cycling, picnicking, playing, watching or exploring natural features.
- These spaces may include bush land, coastal areas, wetlands and riparian habitats, and geological and natural features.
- Sites are managed to enable recreational access while protecting local ecological and biodiversity value.

88. Kick-About Space

- With limited sizeable open space for organised sport, it is essential that the City consider a sizeable unrestricted open space that functions in a multi-purpose capacity, to provide an opportunity for un-organised social games. This type of active recreation is an essential component to the overall open space network that will provide the community with a suitable area for informal sport.
- Kick-About Spaces are particularly important where local residents do not have a nearby district sporting space.

89. Play Space

- Traditionally, children's play areas have been referred to as playgrounds. The City has chosen to adopt the term 'play spaces' as it recognises that an entire open space can offer play opportunities above and beyond a designated playground.
- A play space can incorporate an entire open space site or a small area within a site. Play opportunities do not necessarily have to take the form of traditional play equipment. Trees, logs, rocks or land forms may offer equally interesting and valuable play experiences.

Use

The uses of each open space must be understood in order to ensure the design and embellishment can cater for the various community uses. By considering the potential uses within a particular open space, the City can ensure equitable access for all community members.

The City considers a number of uses as appropriate within open space. Each different use will require different design considerations and different levels of embellishment because of the various way communities utilise these spaces.

It should be noted that one space may incorporate a number of complimentary uses, and the design and embellishment requirements of each use must be considered. In addition to complimentary uses, spaces may facilitate a range of local, district and neighbourhood requirements, it is imperative this is considered in the design and embellishment phase of open space planning.

Potential open space uses include:

- Organised Sport (including turf, hard-courts and equine);
- Off-Lead Dog Exercise (the City does not support fenced off-lead dog exercise areas in unrestricted open space);
- Outdoor Exercise;
- Children's Play;
- Youth Recreation (beyond skate and BMX parks);
- Casual, unorganised sporting activities;
- Community Event Space;
- Connecting With Nature;
- Bushland Conservation;
- Wetland Conservation;
- Creation of an open space network;
- General Recreation; and
- Water Treatment (WSUD).

Whilst the above list does not identify an exhaustive list of open space uses which the City provides for, it identifies the uses which cater for a broad section of the population

Length of stay (open space only)

The City considers open space to have either a short length of stay, or long length of stay. A certain level of design and embellishments will determine the amount of time people stay in open space.

Historically, the City has utilised the term destination park to identify what would now be considered a long stay park. The City considers all open space, including parks to be a destination, and therefore will utilise the length of stay – either short or long lengths of stay - to determine the level of embellishment within open space.

The City defines embellishment as the provision of infrastructure in order to create a high level of amenity and enhance user satisfaction within all open spaces. Embellishments include:

- Activity options – play and recreation opportunities irrespective of age and ability;
- Furniture - tables, seats, bins, BBQ's, shelters;
- Public amenities – toilets, showers;
- Sports playing field infrastructure – goal posts, multi-use games areas, lighting and fencing;
- Signage and pathways; and
- Landscaping, that protects and enhances the environmental, cultural and heritage values of an area.

The level of embellishment within an open space must be commensurate with the level of hierarchy as set out within the Standards of Provision. People will be more likely to travel a larger distance to these open spaces and the amount of time people stay at these spaces will be longer. The longer the people stay in a single open space will typically increase the level of embellishment required. Alternatively, if a local space has a high level of embellishment, it will attract many uses and more people may be more likely to travel to this space, where there is limited parking, no public toilets etc. creating negative impacts on the immediate neighbourhood.

90. Short Length of Stay

- Small, Linear, Local and Neighbourhood open spaces are considered to have a short length of stay.
- These spaces should be designed and embellished for the immediate community who should be encouraged to visit these spaces via local pedestrian and cycle networks.

91. Long Length of Stay

- District & Regional open spaces are considered to have a long length of stay.
- These spaces will attract a larger population catchment, & therefore require embellishments to facilitate a greater length of stay for those who may not reside within the immediate neighbourhood (further than 2km away).
- Embellishments within a long stay space, depending on function, may include public toilets, parking provision, BBQ's, drink fountains.

- The consideration of effective pedestrian and cycle networks as well as additional parking provision is particularly important when creating a long stay open space with a high level of embellishment. This is to ensure that residents surrounding the open space are not negatively impacted by a large amount of people utilising the space.

Place measures

To ensure open spaces are fit-for-purpose, the following place measures will be used:

- Local knowledge;
- Community needs and wants;
- Location and geography, including functionality of land; and
- Local context.

Open Space: Location and Design Criteria

In addition to the benchmarks, location and design criteria are specified for open space and should be referred to where relevant.

Location Criteria	Design Criteria
<ul style="list-style-type: none"> • Access to open space by public transport, walking and/or cycling. • Connected using trails, green links and way-finding signage (including walk and/or bike paths). • Co-located (or sharing) with other facilities or activity centres to facilitate multi-purpose trips. • Strong access networks from activity centres to residential areas and open spaces. • Quantity of open space to serve community needs. • Support economic development in alignment with the City of Swan Economic Vision and Strategy. • Ensure open space is located with safety in mind. • Local spaces to be walking distance of most users. • Regional, district and key neighbourhood spaces served by public transport. • Separate lots are required when allocating open space and community buildings. 	<ul style="list-style-type: none"> • Naming of open space must follow Landgate policies and be consistent with City branding. • Integrate water saving measures – this includes adherence to the City’s water matrix. • Respect local indigenous landscapes. • Maintain and/ or enhance the integrity of significant natural features that adjoin or are within the space. • Support efficient maintenance procedures, including water and energy efficiency. • Spaces to look and feel larger than they are. • Exciting, adaptable and flexible spaces. • At least two universal access points to all open spaces. • Separate entry and exit point in open space car parks. • Reinforced 3m physical activity footpaths (allow services traffic access). • Universally accessible walking and/or cycling paths. • DSR Sports Dimension Guidelines must be adhered to. • Integrate crime minimisation principles into open space. • Buffers must be utilised to separate wetland and conservation areas from other types of open space.
<p>Location criteria supports the following initiatives:</p> <ul style="list-style-type: none"> • Adjoining uses face the open space. • Avoid isolation of open space. • Public toilets located in a well-used and passively surveyed area, with the entrance clearly visible. 	<p>Design Criteria supports the following initiatives:</p> <ul style="list-style-type: none"> • Use of alternative grasses and landscaping (including mulch) – focus of hydro-zoning. • Use of synthetic surfaces, assessed on a case by case basis. • Use design features, such as boardwalks, to control access and minimise the spread of invasive species. • Use of long life, hard wearing materials. • Provision of spectator areas and facilitation of passive surveillance through utilisation of natural undulation. • Provision of shaded rest areas (through vegetation or otherwise). • Limiting use of dense shrubbery to minimise crime. • Use of security lighting to increase perception of safety as required (whilst considering neighbouring uses). • Ensuring clear and visible sightlines. • Semi-transparent fencing to allow passive surveillance. • Avoid large expanses of blank walls, or mitigate using vegetation (e.g. creeper plants) or graffiti resistant paints. • Avoid areas that are closed and isolated. • Use of public art within open space to enhance amenity.

Figure 1: Open Space – Location and Design Criteria

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.

92. Dial 1100 for Dial Before You Dig or go on line prior to any works commencing on site. www.dialbeforeyoudig.com.au
93. 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.
94. 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 irrigation water.
95. Gradients for grass areas shall be equal to or flatter than 1:6 and equal to or flatter than 1:3 for planted areas.
96. Run off of hardstand areas shall drain to adjacent landscaped areas.
97. All drainage infrastructure e.g. GPT/Trash Rack and bubble up pits within a open space is to be clearly drawn and must form part of the detailed landscape plans.
98. New water bodies (ie those not pre-existing the development) that do not serve a drainage function will not be accepted by the City.

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.

99. Irrigation shall be designed and installed to the City's Irrigation System Specifications (available on City's website: www.swan.wa.gov.au) and must be able to be connected to the City's Central Irrigation Control System at time of Handover.
100. The City's electrical requirements are available upon request from the City's Parks and Landscaping Officer.
101. Dial 1100 for Dial Before You Dig or go on line prior to any works commencing on site. www.dialbeforeyoudig.com.au
102. Within subdivisions, water supplies shall not be limited to one water source, with each open space greater than 4000m² preferably to have its own groundwater supply connected to the City's Central Irrigation Control System.

103. Bore and pump capacity shall comply with the approved design specification for the Irrigation System Specification and Bore Construction Specification.
104. Irrigation system designs shall be submitted with landscape drawings and documents, for City assessment and approval prior to any landscape works being undertaken.
105. Designs shall adhere to 'water wise design principle's 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.
106. Designs shall maximise the coefficient of uniformity to enable optimal watering.
107. Soil cover over pipe work shall be as indicated in the City's Irrigation System Specifications.
108. 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.
109. Irrigation within planting areas shall be by emitters and bubbler type hose.
110. Grass shall be irrigated using pop-up sprays or gear drive sprinklers.
111. Where in-ground irrigation is installed in grass, no part shall protrude above ground level except for pop-up sprinklers during operation.
112. Install all solenoid valves, isolating valves and/or gate valves within open space where practical and include 3M Marker Balls.
113. Irrigation sprinklers shall be placed greater than 300mm of back of kerb for low volume roads or 1.2m for higher volume roads (worker safety during maintenance).
114. Irrigation cabinets shall have the City's "P" key locks installed before Handover to the City.
115. One laminated copy of the 'As Constructed' irrigation drawings in A3 format is to be placed within the irrigation cabinet and one additional Copy is to be handed over to the Superintendent at time of Handover to the City.
116. The Developer shall provide the City an electronic copy of the As Constructed Irrigation Drawings, manuals and warranties together with any other information necessary for the operation, maintenance and replacement of equipment prior to Handover to the City.
117. The Developer shall provide the City a copy of any applications and bore licence details issued to the Developer by the Department of Water.

118. 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 at Handover.
119. The bore and pump shall be serviced four weeks prior to Handover, with all service history verifications to be provided to the City at Handover.

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

120. Dial 1100 for Dial Before You Dig or go on line prior to any works commencing on site. www.dialbeforeyoudig.com.au
121. All concrete footpaths shall be 100mm thick in addition to edge thickening and constructed in line with the City's footpath specifications, available from the City's website.
122. Paths and other paved areas shall be installed in accordance with AS 1428 Design for Access & Mobility.
123. Street and park perimeter paths are to be located flush, parallel to and abutting the kerb.
124. For paths abutting kerbs, preference is for the width to be equal to or greater than 2.0m from back of kerb.
125. Shared use paths are to be installed at an effective pavement width of 2500mm.
126. Paths within public access ways are preferred to be 2.0m wide.
127. Path crossings at roads shall have pram ramps installed to City standards. Refer to Appendix A Standard Drawings:
 - STD 60-1s-N (Pram Ramp)
128. Where tactile paving is to be installed, preference shall be given to the use of adhesive type Tactile paving. Refer to Appendix A Standard Drawings:
 - STD 60-1s-N (Pram Ramp)
 - For further details refer to AS/NZS 1428.4.1:2009, Design for Access & Mobility – Tactile Ground Surface Indicators.
129. 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).

130. 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 Appendix A Standard Drawings:
- STD 100-1s A (Paths Within POS)
131. 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 D).
132. Pedestrian paths may intersect at any angle, subject to sightlines and safety aspects.
133. 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.
134. 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.
135. 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.

Public Open Space

136. Paths within public open space shall be a minimum 2.0m wide, with designated shared use paths to be a minimum 2.0m wide.
137. Where properties or walls abut POS, a 2m wide concrete footpath will be required.
138. Where POS exceeds 5,000 sqm and abuts properties, a 3m wide trafficable firebreak must be constructed, in line with the City's firebreak requirements
139. Paved access for maintenance and emergency vehicles shall be provided to all open space and be constructed in accordance with the City's Specification For Construction Of Vehicle Crossovers (available on City's website: <http://www.swan.wa.gov.au/>), secured with a post and chain lockable gate. Refer to Appendix A Standard Drawings:
- STD 21-1s-J (Concrete Crossover Barrier SM Kerb)
 - STD 21-2s-H (Concrete Crossover Mountable Kerb)
 - STD 58-2s-D (Chain & Post Gate Fencing)

Verge

140. 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-J (Concrete Crossover Barrier SM Kerb)
 - STD 21-2s-H (Concrete Crossover Mountable Kerb)
 - STD 21-3s-H (Brick Paved Crossover)
 - STD 21-4s-C (Brick Paving Patterns)
 - STD 27-1s-D (Crossover and Side Entry Pit)
 - STD 29-1s-D (Driveway Gradient)
 - STD 29-2s-C (Driveway Gradient)
 - STD 29-3s-D (Driveway Gradient)
 - STD 29-4s-C (Driveway Gradient)
 - STD 40-2s-C (Brick Paving Edge Restraint)
 - STD 47-2s-G (Crossover Standard Brick Paved & Concrete in Rural Areas)
 - STD 75-1s-C (Crossover Locations)

Median

141. All medians less than 3.0m in width between face of kerbs shall be paved.
142. All medians and islands within 15.0m of an intersection and other median openings shall be paved.
143. 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 *Guidelines*.

Roundabouts

144. 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.
145. Walls or other structures shall not be permitted within roundabouts.

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's Play Space Strategy.

Site choice

146. The age appropriateness and the level / quantity of play opportunities shall be relevant to the functionality and hierarchical classification of the site.
147. Play opportunities shall complement others provided within the same precinct in terms of age appropriateness and variety.

Site design

148. Play equipment, surrounds and soft fall shall comply with Australian Standards, in the first instance followed by Best Practice. Refer to AS 4685 & AS/NZS 4422 Playground equipment and surfacing, and any other relevant standards.
149. 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.
150. Play opportunities shall be located in one general area to enable ease of supervision by carers.
151. Play opportunities shall not be placed within close proximity to private fences or hazards such as busy roads or water bodies.
152. Play opportunities shall allow for informal surveillance.
153. Play areas with sand as a soft fall shall be enclosed by a concrete or limestone edge restraint. Refer to Appendix A Standard Drawings:
 - STD 84-2s A (Edge Restraint to Playground Sand Pit)
154. Top of concrete / limestone playground edge to finish minimum 100mm above adjacent sand softfall areas. In wind affected sites increase to 150mm might be required.
155. For a variety of age group a combinations of play opportunities shall be offered: hiding, balancing, climbing, moveable structures, fixed structures, spinning etc.
156. It is desirable for natural landscape elements to be retained and incorporated within play opportunities.
157. Access for people with disabilities shall be provided to all play spaces.
158. The provision of non-equipment play opportunities is desirable.
159. All play spaces shall have functional shade provided, with a preference for mature trees (tree condition report might be required refer to item 24.11) over shade structures.

160. Seating shall be provided adjacent key play opportunities to enable maximum supervision of children.
161. Any custom designed play equipment shall be approved by the City and require an approved safety audit, detailed maintenance requirements, lifecycle estimates, building licence and structural certification by an accredited engineer.

Other Infrastructure

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

Structures

162. All retaining structures greater than 500mm high shall require a building licence and structural certification by an accredited engineer.
163. All free standing structures greater than 1000mm high shall require a building licence and structural certification by an accredited engineer.
164. A vertical drop of more than 1m must be protected by ballustrade.
165. Structural elements such as boardwalks, decking, seating, gazebos, arbours etc shall be constructed of either steel, recycled plastic or masonry products.
166. No structure may be constructed of timber products, except for Tanalith-E treated pine bollards.
167. Bridges, boardwalks and viewing platforms that are not associated with a natural or drainage water body will not be accepted by the City.
168. Estate entry statements are not to be located within open space. They shall be located within private property.
169. 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.
170. Roofed structures shall have hard surfacing on the ground extending a minimum of 300mm beyond all parts of the eave line.
171. Internal spaces of structures to be used by the public shall be paved or concreted.
172. Shade structures, including where appropriate shade sails/textiles proposed, shall be designed to minimise vandalism and also prevent climbing onto the structure.

173. 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.
174. 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.
175. Handrails shall be provided to at least one side of any steps with a 180 degree return on each end of rail. Handrails and tactiles to be installed to AS 1428 Design for Access and Mobility.
176. Ramps shall be edged with a raised kerb and be installed to AS 1428 Design for Access and Mobility.

Public art

177. In accordance with the City's Policy POL-C-142 Public Art, the City encourages the provision of approved public art within open space, streetscapes and other public spaces.
178. 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.
179. Public art must be suitable for placement in public realm and designed to ensure safety for members of the public - contain no protrusions or entrapments which might cause injury.
180. Public art shall be resistant to vandalism and have low ongoing maintenance liability.

Rubbish Bins

181. Preference shall be given to the use of metal or recycled plastic 120 litre bins as supplied by the City.
182. Alternative bin types will only be considered in exceptional circumstances. Required features 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.
183. Suitable poles, bags and signage for standard type dog bins shall be provided by the City.

Bollards

184. Preference shall be given to the use of recycled plastic bollards. Refer to Appendix A Standard Drawings:
 - STD 39-3s-G (Bollard Fencing)
185. Bollards shall be located on the property boundary or, where appropriate, aligned with peripheral tree planting.
186. Bollards shall be spaced at a maximum of 1.5m centres.

Lighting

187. Lighting will be required to be incorporated into open space designs in line with the City's Standards of Provision Requirements.
188. All lighting for parks, hard courts, ovals, etc. shall be in accordance with AS/NZS 1158, Lighting for roads and public spaces.
189. The City's electrical requirements are available upon request from the City's Parks and Landscaping Officer.
190. 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.
191. Within open space 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.
192. All lights within an open space are to be controlled by one dedicated timer, to control anti-social behaviour.
193. Uplighting shall be flush-mounted with vandal resistant glass
194. Bollard or boardwalk lighting will not be accepted by the City.
195. City standard is to bury the pits for all sports lighting works.
196. Hybrid wiring systems that centrally locate the lighting gear to be the preferred option for all new installations and upgrades. This is to reduce the amount of thick cabling required.
197. Powers supplies to be located as close as possible to the ovals. This will reduce the cable cost in thickness and length.
198. Future theft sites with extensive damage to cable pits, bury the cable pits, cover with heavy-duty concrete and turf. Survey and record pit locations, radio detection balls or GPS locators can also be used.

Fencing

199. No brush wood or other timber products (eg: pine lap style) shall be used on road reserve boundaries.
200. Private boundary fencing fronting POS shall be visually permeable where practical and designed to allow surveillance in accordance with the specification detailed in Local Planning Scheme 17.
201. Revegetation fencing within POS shall be constructed of 1500mm high post and rail, with 125mm treated pine poles and crossbeam with concrete footings. A guidewire shall be placed on the bottom of the fence.
202. Commercial grade fencing with double clamps shall be used within POS. Refer to Appendix A Standard Drawings:
 - STD 58-6s-A (Commercial Grade Fencing)

Furniture

203. All open space furniture is to be constructed of either steel, aluminium or recycled plastic.
204. Drinking fountains shall be included adjacent to play spaces and considered for open space areas according to its hierarchy. Drinking fountains to be universally accessible and include a bottle tap and dog bowl as approved by the City.
205. Drinking fountains shall be installed with an isolating valve in an accessible valve box located close to the fountain.
206. Seats and shade shall be considered for play areas and/or along paths within open space.
207. Seats, tables and benches shall be accessible and set in a hard stand area. Refer to Appendix A Standard Drawings:
 - STD 76-1s (Min Requirements for UA Bench Seats)
 - STD 76-2s (Bench Seat Installation)
 - STD 76-3s (Installation Picnic Table)
208. Barbeques shall be provided in open space according to its hierarchy. Appropriate drainage and soak wells, as approved by the City, must be included in the design to dispose of collected rainfall from the fat trap.

Basins

209. A maintenance access shall be provided to each basin to enable safe access during inspection and maintenance activities, including maintenance vehicle access to bubble-up pits. Ensure access location has a safe access point from the road reserve.

Toilets

210. Toilets should on be placed at POS that meets the requirements as specified in the Standards of Provision: Public Open Space.
211. The toilet block and its surrounds must be designed to reduce antisocial behaviour. This could be steps to promote passive surveillance, timed locks, permeable fencing, low growing groundcovers or timed lighting
212. Custom toilet units are not accepted. Toilet blocks should be standard off the shelf products to simplify maintenance requirements and for sourcing spare parts.
213. Toilets should include a dedicated plumbing duct which is to include a water tap that is capable of connecting a hose.
214. Toilets should consist of moulded stainless steel pans with no toilet seats.
215. Toilet blocks should be designed to include no ledges for syringes to be placed and include syringe disposal units.
216. Rubber door stops should be installed on all doors within a toilet block

Bush Fire Requirements

217. On any POS or public reserve that is greater than 5,000sqm, a 3m wide trafficable firebreak must be constructed on any side not bordered by a road.
218. Any POS or public reserve that does not have a dedicated groundwater allocation may be assessed as carrying a BAL rating, and may not meet the requirements of being classified as low threat vegetation under the fire regulations.
219. In Bushfire prone areas, trees with stringy, course, loose or fibrous bark should be avoided.
220. In Bushfire prone areas, trees must not have touching canopies and have a canopy height greater than 2m at maturity.
221. In Bushfire prone areas, trees that shed large amount of leaves, litter or needles shall be avoided to reduce fuel loads.
222. In Bushfire prone areas, plants that have a course texture and density should be avoided.
223. In Bushfire prone areas, plants that retain dead leaves, branches and twigs should be avoided.

- 224. In Bushfire prone areas, plants that have waxy or oily leaves should be avoided and substituted with plants with soft, thick or fleshy leaves.
- 225. In Bushfire prone areas, plants that are prolific breeders, either through self seeding or suckering, shall be avoided.
- 226. Garden beds and mulched areas should be mulched to a thickness of 100mm

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 open space.

General

- 227. Dial 1100 for Dial Before You Dig or go on line prior to any works commencing on site. www.dialbeforeyoudig.com.au
- 228. The retention and enhancement of naturally occurring native vegetation is encouraged, particularly in rural areas where native vegetation is more common.
- 229. All plant species shall require City approval.
- 230. 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.
- 231. Planting design and species selection shall not impede sight lines for motorists and shall be in accordance with MRWA and City standards.
- 232. 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.
- 233. Whenever possible, planting, even with irrigation, shall be undertaken during the months May to September.
- 234. 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.
- 235. 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.
- 236. Mulch shall be placed to a minimum settled depth of 75mm.
- 237. Pinebark mulch is preferred for traffic medians due to higher fire resistance.

238. Peat moss shall not be used in any mulch application.
239. At time of Handover to the City, the expected success rate of all open space planting is 80%. Tree replacement, infill planting and re-mulching to bare areas might be requested by the City prior to Handover.
240. Mulch is not to be used in foreshore areas.

Public Open Space

241. All garden beds and/or mass planted areas shall be enclosed by a paved edging of concrete, limestone blocks or other approved material. Kerbing shall be constructed using machine formed extruded insitu concrete to have dimensions 200mm wide x 200mm deep. Refer to Appendix A Standard Drawings:
 - STD 84-1s-A (Typical Kerb/Edge Restraint)
242. 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.
243. 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

244. 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 Appendix A Standard Drawings:
 - STD 88-2s-A (Verge Landscaping)
 - STD 88-3s (Verge Landscaping Path Against Kerb)
 - STD 88-4s (Verge Landscaping Path Adjacent to Boundary)
245. 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.
246. 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.
247. 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 Appendix A Standard Drawings:
 - STD 88-5s-B (Verge Landscaping-No Path)

- 248. 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.
- 249. Shrub plantings in roads controlled by MRWA shall comply with MRWA standards.

Medians

- 250. 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.
- 251. Plants that grow to a maximum height of 500mm at maturity are permissible within 5.0m of a pedestrian opening.
- 252. Shrub plantings in roads controlled by MRWA shall comply with MRWA standards.

Roundabouts

- 253. 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.
- 254. Shrub plantings in roads controlled by MRWA shall comply with MRWA standards.

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

- 255. Tree planting shall be in line with the City of Swan Tree Planting Guideline available from the City's website www.swan.wa.gov.au.
- 256. Tree plantings in roads controlled by MRWA shall comply with MRWA standards.
- 257. Dial 1100 for Dial Before You Dig or go on line prior to any works commencing on site. www.dialbeforeyoudig.com.au
- 258. Trees shall generally be planted greater than 8 metres from a street light, with a closer location subject to species selection and City approval.
- 259. Trees proposed for planting within 1.8m of paving shall require a root control barrier or root director approved by the City.

260. Trees shall be planted greater than 1.8m from the driving edge or face of a kerb or footpath.
261. Trees shall be 45 litres minimum with 100 litres preferred, with tube stock being suitable for mass plantings.
262. Local native tree species are preferred.
263. The use of deciduous trees will not be allowed within 100m of any drainage, swale, natural waterway and/or wetland.
264. Tree planting to verges shall comply with Typical Tree Planting specification. Refer to Appendix A Standard Drawings:
 - STD 87-1s-B (Typical Tree Planting)
265. Tree wells are to be used for all new tree planting to allow for more concentrated watering and fertilising as well as improved mowing practices.

Parks

266. Existing trees are to be retained and protected during open space development works where possible. Refer to the City's Guideline on Tree Protection, Planting, Pruning, Removal & Maintenance.
267. Where mature trees are retained in open space as part of an urban development, they shall not be closer than 10m to any existing or proposed buildings or dwellings.
268. Where play spaces, paths and park furniture are proposed within close proximity or under the canopy line of existing mature trees, a tree condition report prepared by qualified arborist might be required to ensure public safety.
269. Trees shall be planted further than 5.0m from ornamental lights unless uprights are used.
270. Trees shall be located within mass planted areas wherever possible.
271. Where trees are located within grass areas, their spacing shall be greater than 3.0m to allow ride-on mowing maintenance between each tree.
272. Tree selection to parks to include large and very large scale trees (that are generally not suitable for verge and backyards plantings) to enhance species diversity and help to increase urban forest canopy cover.

Verge

273. 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.

274. 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.
275. For corner properties, trees shall not be permitted within 12.0m of the intersecting kerbs. Refer to Appendix A Standard Drawings:
 - STD 88-1s (Verge Tree Restrictions Corner Properties)
276. Where applicable, street trees shall be positioned in the verge within standard alignment (2.4 to 3.0m from lot boundary) as described in the Utility Providers Code of Practice for Western Australia.

Medians

277. Tree planting shall not be permitted within 15.0m of an intersection.
278. Tree planting in medians controlled by the City that are less than 4.0m in width may be considered.
279. 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.
280. Trees planted in medians with flush kerbs shall have approved bollards with reflective tape.

Roundabouts

281. 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.
282. 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.

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

283. Dial 1100 for Dial Before You Dig or go on line prior to any works commencing on site. www.dialbeforeyoudig.com.au
284. Gradients shall be equal to or flatter than 1:6.

285. Within open space, each area of grass shall have ride on mower connectivity, without having to go on to the adjacent roads.
286. 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.
287. Grass areas shall be greater than 3.0m wide and 3.0m long, with sizes and shapes to be practical for purpose.
288. Each grass area shall be bounded by a road or garden kerb, path or other approved solid material.
289. Park design is to minimise the extent of turf edging by avoiding use of winding pathways.
290. Open space is to be irrigated using hydro zoning principles to match water usage with the proposed purpose of landscaping or turf.
291. Pennisetum clandestinum (kikuyu) is the preferred grass species for open space.
292. Pennisetum clandestinum (kikuyu) shall be installed by roll on turf or by stolons at a minimum density of 1:10 per metre square.
293. All grass to be installed in open space is to be tested for and certified as being sting nematode free prior to installation.
294. 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.
295. Grass shall not be installed within public access ways less than 5.0m in width.

Native or ornamental grass

296. Where suitable to the purpose, native (e.g. Sporobolus virginicus – Native couch) or ornamental grasses may be substituted for lawn grasses.
297. 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.

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

298. A detailed maintenance program shall be submitted for consideration and approval by the City prior to construction.
299. 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.
300. An initial soil and water analysis shall be undertaken prior to grass establishment to provide details on fertiliser requirements.

Maintenance Period to Handover

301. Maintenance by the Developer of a streetscape or open space 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 open space, that entire park is to be maintained for the extended period.
302. 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.
303. 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.
304. 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.
305. City 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

Standard drawings are available upon request from the City's Parks and Landscaping Officer.

Concrete Crossover Barrier/Semi-mountable kerb	STD 21-1s-J
Concrete Crossover Mountable kerb	STD 21-2s-H
Brick Paved Crossover	STD 21-3s-H
Brick Paving Patterns	STD 21-4s-C
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-D
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-D
Driveway gradient: Minimum Carport Level and Driveway Gradient for Verges at less than 2% Gradient only	STD 29-4s-C
Bollard Fencing	STD 39-3s-G
Brick Paving Edge Restraint	STD 40-2s-C
Crossover - Brick Paved and Concrete in Rural Areas	STD 47-2s-G
Chain and post gate fencing	STD 58-2s-D
Commercial Grade Fencing	STD 58-6s-A
Pram ramp – 3 Plane	STD 60-1s-N
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-A
Edge restraint to Playground Sandpit	STD 84-2s-A
Typical Street Tree Planting	STD 87-1s-B
Verge Tree Restrictions for Corner Properties	STD 88-1s-A
Verge Landscaping (No Path)	STD 88-2s-A
Verge Landscaping (Path against Kerb)	STD 88-3s
Verge Landscaping (Path against boundary)	STD 88-4s
Verge Landscaping (No Path)	STD 88-5s-B
Paths within Parks	STD 100-1s-A

Appendix B: Amenities and Embellishment Matrix

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

Permitted/Not Permitted

In addition to the amenities in Table 1, the following amenities and embellishments **are permitted** in 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;
- Exercise 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:

- 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.

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:

- Length of Stay of Open Space;
- 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:

- Length of Stay of Open Space;
- Other embellishments within Open Space;
- 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.

Maintenance Period

The items marked '❖' or '✕' in Table below 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.

Open Space Framework

Hierarchy	Recreation	Sport	Nature	Kick About	Play Space	Description	Size	Indicative Catchment	Length of Stay	Potential Uses	Embellishments to Consider
Local	✓	x	✓	✓	*	Small parklands that service the recreational needs of the immediate surrounding area. They provide basic embellishment commensurate with short stays with higher levels of embellishment expected on larger spaces.	0.4 –1 ha Nb. In the case of a Kick About space, there must be enough unrestricted space to kick a ball, play a small game of cricket etc.	<ul style="list-style-type: none"> >400m 	Short Stay	<ul style="list-style-type: none"> Connecting with Nature Creation of an Open Space Network Casual, unorganised sport General Recreation 	<ul style="list-style-type: none"> Unrestricted turfed area Verge Paths Natural Shade ∞ Security Lighting □ Relocated mature trees ❖ Filtration plants, mechanical aeration pumps or reticulating pumps ✕ Drainage - bubble up in landscaping ❖
Neighbourhood (All other functions)	✓	x	✓	✓	✓	Serves as the recreational and social focus of a community where residents are attracted by the variety of features, and opportunities to socialise. When a play space is to be included, the identified site should focus on a specific age category & offer a suite of play opportunities tailored toward the toddler, junior and intermediate ages.	1-5ha	<ul style="list-style-type: none"> 800m 	Short Stay	<ul style="list-style-type: none"> Off-lead Dog Exercise Outdoor Exercise Connecting with Nature Creation of an Open Space Network Casual, unorganised sport Children's Play Youth Recreation General Recreation Community Event Space WSUD● 	<ul style="list-style-type: none"> Natural Shade ∞ Multi-use Games Areas Play Space Youth Space Drink Fountain Security Lighting Outdoor Exercise Equipment Paths through open space Relocated mature trees ❖ Filtration plants, mechanical aeration pumps or reticulating pumps ✕ Drainage - bubble up in landscaping ❖ Drainage – water body ❖ Bridges, boardwalks, viewing platforms ❖ Artwork ✕
Neighbourhood (Sporting Function ONLY)	✓	✓	✓	✓	✓	Although sport spaces are permitted at a neighbourhood level, it is preferred that these sites are located within district sized areas, as two sports ovals can be incorporated into a district site maximising the ability to use the spaces. Sporting types accommodated within spaces will be identified on local demand through Place Measures.	1-5 ha The sport space must be senior sized and there must be minimum provision of 2.9ha of flat turfed area. Δ	<ul style="list-style-type: none"> 800m 	Long Stay	<ul style="list-style-type: none"> Organised Sport Off-lead Dog Exercise ☒ Outdoor Exercise Connecting with Nature Creation of an Open Space Network Casual, unorganised sport Children's Play Youth Recreation General Recreation Community Event Space WSUD● 	<ul style="list-style-type: none"> Sports Pavilion/Stand-Alone Change Rooms Minimum floodlighting to training standard for predominant sport Public Toilet Natural Shade ∞ Multi-use Games Areas Play Space Youth Space Drink Fountain Security Lighting Outdoor Exercise Equipment Sport training nets Paths on perimeter of sporting space Additional car park to cater for long stay function Relocated mature trees ❖ Filtration plants, mechanical aeration pumps or reticulating pumps ✕ Drainage - bubble up in landscaping ❖ Drainage – water body ✕ Bridges, boardwalks, viewing platforms ❖ Artwork ✕
District	✓	✓	✓	✓	✓	Principally provides for organised formal sport and recreation for multiple surrounding neighbourhoods. These are high amenity open spaces suitable for regular sporting events or festivals. They provide a significant visual break in the urban environment. District spaces should provide play opportunities for a wide age range (junior to teenager) and ensure that some appropriate, accessible play opportunities are provided for children with disabilities.	5-20 ha Sport >15ha A minimum provision of 4.8ha of flat turfed area to meet the needs of the sporting community, and maximise the financial viability and use of the sporting space. Δ There must be the provision for at least 2 senior AFL- size oval spaces within district open spaces. This requirement does not mean every sports space within the City will be oval sporting spaces but instead can be retrofitted to suit any sport into the future.	<ul style="list-style-type: none"> 2kms 	Long stay	<ul style="list-style-type: none"> Organised sport excluding equine Off-lead Dog Exercise Outdoor Exercise Connecting with Nature Creation of an open space network Casual, unorganised sport Children's Play Youth Recreation General Recreation Community Event Space WSUD● Bushland/wetland conservation 	<ul style="list-style-type: none"> Sports Pavilion/Stand-Alone Change Rooms Minimum floodlighting to training standard for predominant sport Public Toilet Natural and Artificial Shade Relocated mature trees ❖ Multi-use Games Areas BBQ Ω Play Space Youth Space Drink Fountain Security Lighting Outdoor Exercise Equipment Paths through open space/perimeter of sporting space Additional car park to cater for long stay function Filtration plants, mechanical aeration pumps or reticulating pumps ✕ Drainage - bubble up in landscaping ❖ Drainage – water body ✕ Bridges, boardwalks, viewing platforms ❖ Artwork ✕ If identified as event/festival space, the following would be required: <ul style="list-style-type: none"> 3-phase power Shade Vehicle Access Storage Public Toilets Potable water access
Regional	✓	✓	✓	✓	✓	The largest provision of open space in the community, they are the focal points for organised sport, recreation, conservation and environmental features. Serve not only residents of the City but the wider region. Provides both the highest quality of facilities and quantity in one space to cater for the most intensive usage of all spaces.	Size dependant on function. Sport >20 ha	<ul style="list-style-type: none"> Majority of users will drive Serves the region 	Long stay	<ul style="list-style-type: none"> Organised sport Off-lead Dog Exercise Outdoor Exercise Connecting with Nature Creation of an open space network Casual, unorganised sport Children's Play Youth Recreation General Recreation Community Event Space WSUD● Bushland/wetland conservation 	<ul style="list-style-type: none"> To be determined in line with function and uses

Table 1 – Maximum Public Open Space Amenities and Embellishment Standard

- * The provision of play spaces within local open space should only be considered where there is an identified gap in provision, otherwise play spaces should only be installed in neighbourhood, district and regional spaces. A neighbourhood level play space will create greater access for the wider community to use, allow for greater rationalisation of play spaces and save on maintenance and life cycle costs of play space equipment.
- Δ The orientation of playing fields will be determined by the specific sporting code it is designed for.
- ⊕ Under Local Law all reserves located in the City, except for those set out within the City of Swan Dog Exercise and Dog Prohibited Areas, are specified as dog exercise areas except for:
 - An area being used for sporting other activities, as permitted by the City, during times of such use;
 - A car park; and
 - Any through fare.
- ∞ In order to maximise usage of open spaces, the City may permit artificial shade to be installed, whilst natural vegetation establishes.
- Security lighting is only permitted when local open space acts as a key pedestrian network thoroughfare.
 - Natural hydrology should be mimicked, where possible, by minimising the effective imperviousness of a catchment, and disconnecting constructed impervious surfaces from receiving water bodies by preventing direct stormwater discharge from piped drainage systems. The priority for water sensitive urban design is water quality treatment and not drainage for stormwater therefore should only be designed for small sized rain events where water is able to be treated (15mm rainfall event). The management - through retention and/or detention - and treatment (if required) of stormwater from constructed impervious surfaces generated by the first 15 mm of rainfall at source as much as practical. Larger rainfall events should be catered for through other stormwater management methods which do not impact on the required open space contribution.
- Ω In the case of a BBQ being installed at a district open space, public toilets must also be installed.
- ❖ Items require 3 year maintenance period.
- ✘ Items require 5year maintenance period.

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

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 or online at www.swan.wa.gov.au:

- City of Swan Public Art Policy POL-C-142
- Interpretation of Watercourses and Wetlands Policy POL-C-063
- Private Development within City Road Reserves Policy POL-C-058
- Rural Subdivision Revegetation Policy POL-C-060
- City of Swan Standards of Provision: Open Space and Community Buildings

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.swan.wa.gov.au:

- The City of Swan Landscape Technical Specification
- The City of Swan Irrigation Specification
- The City of Swan Tree Planting Guide
- City of Swan Play Space Strategy
- Crossover Specification August 2017
- Shade Sails Specification
- Tree Protection, Planting, Pruning, Removal & Maintenance Guideline

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
- AS 1428 Design for Access and Mobility
- AS 4685 Playground equipment and surfacing Development, installation, inspection, maintenance and operation
- AS/NZS 4422 Playground surfacing

Other 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.