



City of Busselton

Geographe Bay

Engineering and Works Services Standards and Specifications

Section 9(d)

A Guide to Landscape Public Open Space (POS)

These Standards and Specifications are required to be practiced in the City of Busselton. These Standards and Specifications will be maintained by the Director, Engineering and Works Services.

Revision No	Date	Section(s) Amended	Prepared	Reviewed
A	December 2010	All	Engineering & Works Services	Infrastructure Development
B	June 2013	All	Engineering & Works Services	Infrastructure Development

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Public Open Space

General Principles and Objectives

It is the intent of this document to provide a broad understanding of the City's planning principles and objectives in the identification and development of Public Open Space (POS) lands where ceded to the Crown free of charge from landowners proposing Development Guide Plans and Subdivision.

Where such lands will be managed by the City, the lands shall be handed over as a sustainable resource for the Community to use and enjoy through the general principles and objectives of environmental, economic and social responsibility

The three main strategic focus points from the City of Busselton's Strategic Plan 2006 / 2011 relating to POS are;

- Community and Social Well Being*
- Built and Physical (Infrastructure) Well Being*
- Natural and Environmental Well Being*

1 Introduction

This document has been produced to provide a suite of general information and fundamental guidelines as to the general design considerations into the multitude of purposes that can be incorporated into Public Open Space (POS) within the City of Busselton.

There are numerous aspects to be considered to identify where, why and how POS should be used and what ultimately are the benefits to the local Community and the City as a whole.

All POS should be identified in the planning process at a strategic planning level to ensure the City's main objectives can be achieved prior to any detailed design works.

These standards and specifications apply to all Development Guide Plans, Subdivisions, and Development Applications (if applicable). The City of Busselton requires sustainable outcomes if developing POS as part of a planning condition by the placement of infrastructure, land use planning, urban design, recreation both passive and active, environmental and conservation objectives, civil engineering and landscaping.

The Busselton City is relatively new in terms of European settlement and development. It is important to note the City's historic link of the aboriginal people and their culture and the importance of environment within that culture. It is also a responsibility of current designers and planners to carefully consider our unique heritage through protection and enhancement of that environment.

To reflect the values of our heritage the City requires the naturalness of our environment to be a major objective when undertaking developments that include public open space be they road reserves, public parklands or foreshore reserves.

1.1 General

This Specification is not a Planning document and relates to providing sustainable guidelines and meeting acceptable standards in association with any approvals or specific conditions prior to approval and the subsequent POS handover to the City either on Practical Completion or at the end of any designated Maintenance Period.

To determine the requirements of works, this standard and specification will also need to be read in conjunction with the City's relevant technical specifications and statutory requirements, Council Policies, relevant State and Federal Government policy and the WA Planning Commission (WAPC) conditions including operational policy *Liveable Neighbourhoods (latest version)*.

Further guidance in City acceptable practices in relation to Public Open Space, will be dependant on individual circumstances for each particular development and may be subject to further consultation with the City.

2 Relevant City Policies

To determine the City's objectives within each development, Council approved policies are available on the City's external website to inform the proponents of the City's intent when assessing subdivisions and development guide plans. There are

numerous other policies relating to Contributions, Infrastructure and other development requirements.

3 Public Open Spaces

Fundamentally all POS including road and foreshore reserves should be shown as a reflection of the surrounding landscape character

3.1 General

Public Open Space (POS) is the land set aside in development proposals to provide amenity, conservation and recreation within a subdivision. Each POS provides an opportunity to enhance the character and the needs of an area and improve liveability to the surrounding neighbourhood and district.

A POS area can be made up of a singular use or an assortment of uses that can be supported by relevant infrastructure to provide a multifunctional zone. For example a POS of reasonable sized dimensions may support some drainage in large event rainfall (maximum 20% of POS), be part of a strategic pedestrian and cycling network, provide a sporting facility, ablution facilities, passive recreation, playgrounds and conservation areas.

The identification of Public Open Spaces is part of a strategic planning requirement in the selection of suitable sites. POS areas are identified through the Western Australian Planning Commission (WAPC) and the City planning process and will in all instances override this Standard and Specification where anomalies may exist in the direction or intent of this document. In most instances the WAPC document 'Liveable Neighbourhoods' (latest version) will be used as a basis in the fundamental requirements of a POS.

To understand the differences between Public parklands, the 3 main types are shown below;

The general description of Public parkland taken from 'Liveable Neighbourhoods (Oct 2007) is;

- **Regional Open Space** - As defined under a regional or sub regional structure plan and / or included in a region scheme and set aside for acquisition. Regional Open Space should accommodate active and passive recreation such as major playing fields as well as conservation and environmental features.

Regional Open Space (ROS) will in most instances align with this document but is generally a separate requirement with further consultation with the Western Australian Planning Commission (WAPC) and the City on strategic planning decisions within a designated locality or district. For example ROS could include large conservation areas and / or sporting fields and may be identified as a portion / whole or adjacent to a proposed subdivision or structure plan due to the location, needs of the Community and / or conservation values within the district.

- **Foreshore Reserves** - Which are contributed free of cost by the owner through the subdivision process (eg land abutting a river, creek, lake or coast)

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- **Public Open Space (POS)** - Which is contributed free of cost by the owner through the subdivision process (eg district park, neighbourhood park, local park, special purpose parks, playing fields, community purpose sites).

Public parkland within this document will be covered under either Foreshore Reserves or Public Open Space but can still apply to ROS.

Summary of the General Principles and Objectives (*Liveable Neighbourhoods Oct 2007*) seek to provide a range of site responsive urban parkland which is surveilled, safe and conveniently located for the majority of the residents they are indicated to serve.

3.2 POS Categories

To identify the requirements for each POS and as a guide in the early development stages of planning for POS areas, *Table 1* below sets out as an example on how this can be achieved.

Individual or specialist planning advice on important characteristics or needs of a Subdivision / Structure Plan / Development Guide Plan will need to be taken into consideration to ensure population densities, demographics (including encouragement of designing for younger age groups), total usability, biodiversity, facilities, designing out crime, passive transport corridors, recreation, conservation, etc need to be progressed.

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Table 1

Type of POS	Example of Community Uses	POS requirements (dependant on use - examples below are only some suggestions)	Location requirements	Preferred categories (SOB Policy 185/3)	Minimum size requirement	Levels of maintenance
Drainage (Regional flood paths) - dependent on community use	playing fields, conservation, passive use, recreation	Grassed where part of playing field or trees and shrubs	possible restricted use public open space in adverse weather, ability for storm event water to be held for infiltration or pass through	Cat 3 with Cat 2 only where part of formal playing field	Part of either district, neighbourhood or local park	broadacre - low / medium and/or intensive low / medium
District Parks - Generally 2.5 - 7 hectares	Formal Playing fields, adventure playgrounds, conservation areas, walking, cycling network	trees and shrubs / hard surfaces for netball, basketball, cricket pitch / parking / lighting / grass with irrigation for formal playing fields / building facilities ie toilets / paths / access roads, furniture	Serving 3 neighbourhoods and between 600 metres and 1 km walking distance, may partner with schools for shared usage of formal playing fields	Cat 2 irrigated formal playing fields as priority; second priority playground surrounds remainder Cat 3.	2.5 - 7 hectares	broadacre - low / medium with some intensive low / medium
Neighbourhood parks - Generally 3,000 - 5,000 m ²	Playgrounds, public art, informal playing zones, conservation areas ie foreshore reserves	Some irrigated grass to playgrounds surrounds / trees and shrubs / parking / paths / lighting if strategic paths / building facilities ie shade structures, furniture and toilets	Within 400 metre walking distance and serving 600 to 800 dwellings / towards edge of neighbourhood or linking to future subdivision areas	Cat 3 with minimal Cat 2 (Can be combination dependent on cost to maintain local parks, availability of water for irrigation)	3,000 - 5,000 sq metres	broadacre - low / medium with some intensive low / medium
Local Parks - Generally up to 3,000 m ²	playgrounds, resting, public art, sense of place, conservation	Seasonal grasses / trees and shrubs / path connections / playgrounds, bench seats	Within 150 to 300 metres safe walking distance from dwellings	Cat 3 for most unless specific site has high profile location (central neighbourhood) and own bore system with available water	up to 3,000 sq metres	intensive / low / medium
Town square / central neighbourhood - Generally up to 3,000m ²	civic, public art, playgrounds, conservation	lawn / trees and shrubs / hard surfaces / parking / lighting / irrigation / building facilities ie shelters / paths / paving	Within or adjacent to a district village centre or central neighbourhood position	Cat 1,2,3 (Can be combination dependent on usage / locality)	up to 3000 sq metres	intensive low / medium / high
Road reserves including Medians, verges and central islands	neighbourhood connectors, primary local roads, road safety, passive, aesthetics	All low shrubs <75cm or paving near intersections / paths to verges / trees to be located away from intersections at nominated distances.	Restricted use public open space	Natural verges rain gardens / water catchments all Cat 3	as required	low / medium

3.3 Vegetation Retention within a Development

At all times within a development and particularly where it can be incorporated within POS and road reserves, naturally occurring trees and native understorey species should be retained. When assessing a subdivision for engineering and landscape design, urban design principles should reflect the location of existing vegetation and emphasise the design on retention techniques for existing vegetation particularly trees.

The South West of WA is a biodiversity hotspot and particularly along the coastal strip between Bunbury and Dunsborough. This strip is significant because of the Western Ringtail Possum - WRP (*Pseudocheirus occidentalis*) and its core habitat of Peppermint tree woodlands (*Agonis flexuosa*) forming the main habitat for WRP and therefore will need to be considered in the planning approval process. The WRP is listed under the Commonwealth's *Environment Protection and Biodiversity Act 1999* (EPBC Act) as a vulnerable species.

As part of the preliminary assessment for retention, an arborist's report on tree condition and significant tree identification can help provide information into the health of trees for suitable design outcomes to the City and the relevant State (Department of Environment and Conservation - DEC) and Federal (Department of Environment, Water, Heritage and Arts - DEWHA) government agencies. The relevant agencies may consider conditional approval of some clearing within a development only after assessment of where remnant vegetation is situated and wherever remnant vegetation can be preserved.

Where particularly high value vegetation (significant trees) is present, then wherever possible within a development this should be considered for retention under public open space, road reserves, foreshore reserves and drainage corridors.

Some of the considerations when high value vegetation is present may include but are not limited to:

- Supplying a greater amount than 10% of lands for public open space for a significant area of vegetation to be set aside for conservation purposes.
- Providing extended wildlife corridors and linkages for wildlife movement through the development into adjoining POS areas by wider road reserves or linear POS connectors.
- Providing restrictive covenants on land titles to ensure maximum vegetation retention.
- Retention of vegetation within landscape buffers and drainage corridors.

All clearing must be identified to ensure compliance with the Western Australian Environmental Protection Act 1986 amendment on Environmental Protection (Clearing of Native Vegetation) Regulations 2004 and also the Commonwealth's Environment Protection and Biodiversity Act 1999 (EPBC Act). Clearing for development or construction within any development may require approval or clarification from the Department of Environment and Conservation (DEC) and also the Department of the Environment, Water, Heritage and the Arts (DEWHA). The City may also provide further restrictions on clearing where there are suitable examples of poorly represented or good condition vegetation.

When all approvals by the relevant authorities in relation to clearing have been endorsed by the respective agencies by written confirmation, then clearing can be undertaken. All trees to be retained shall be marked and fenced off to ensure no damage occurs. Wherever Peppermint trees cannot be retained, a 'spotter' will be required to capture and relocate any WRP as part of any clearing conditions.

Wherever possible green waste should be processed on site and reused for landscape treatments within the POS at the end of the hard engineering works. This is part of the City Policy for treatment of green waste. Prior to considering any removal of bulk vegetation from a site, a cost/benefit summary on green waste should be undertaken to improve sustainability principles in the transport and disposal off site of any vegetation and the subsequent import of 'new' mulch to the site for landscape works.

3.4 Landscape Plans for POS, Foreshore Reserves and Subdivision

Landscape Plans are generally required for Development Guide Plans (DGP) or Subdivision Development Applications.

For DGP's, these can be provided in stages as a Landscape Strategy (LS) - DGP stage, Landscape Plan - Detailed Area Plan (DAP stage) and a Landscape Implementation Plan (LIP) - construction stage, to provide the link from strategic through to detailed information.

For Subdivision only, a Landscape Plan will be part of a City condition of subdivision approval.

Landscape Strategy (LS) for Development Guide Plans (DGP)

A Landscape Strategy for the overarching DGP area establishes the broad outline of landscaping for retention, rehabilitation and revegetation of POS areas including road reserves, foreshore reserves and drainage corridors to the satisfaction of the City.

The Strategy shall take into account a summary of the specifications for landscaping as dictated by other documents and legislative requirements of relevant agencies such as Fauna Management Plan, Wetland Management Plan, Mosquito and Midge Management Plan, etc.

The Landscape Strategy shall be submitted at the same time as the DGP and formatted to a scale clearly showing all the relevant information – see Section 9(a) – Landscape General Guidelines for details:

Landscape Plan (Detailed Area Plan - DAP Stage) - Following a Landscape Strategy for a Development Guide Plan (DGP)

The DAP landscape plan is submitted at the same time as the Detailed Local Area Plan (DLAP) for endorsement.

The scale should be to a nominated size and clearly show all the relevant information see Section 9(a) – Landscape General Guidelines for details:

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NOTE: The DAP Landscape Plan will require a Planning Policy Statement that at subdivision stage a condition is to be imposed which requires the Developer to provide detail designs to the satisfaction of the City on how the POS areas will be constructed and finished through a Landscape Implementation Plan for individual POS areas, foreshore areas and adjoining road reserves.

Landscape Implementation Plan (LIP) - Following endorsement of Landscape Plan (DAP) for DGP

As part of the DLAP Planning Policy Statement after the Landscape Plan (DAP) is approved, landscape construction drawings and a maintenance schedule is submitted as a Landscape Implementation Plan (LIP) to the City and is a requirement of subdivision approval prior to clearance for construction. The plan should clearly show all POS areas and the detailed intentions of the design and construction.

The scale should be a minimum of 1:200 in size and clearly show all the relevant information see Section 9(a) Landscape General Guidelines for details;

Landscape Implementation Plan (Subdivision) -

Generally small subdivisions do not need to provide POS but some public areas may form part of the requirement for subdivision clearances. The standard conditions for Subdivision applications to the satisfaction of the City of Busselton include:

- The location and species of all trees to be removed and / or retained.
- The location and type of fencing to be installed.
- The location and type of reticulation to be installed.
- The location and type of paving to be installed.

The Plan should also include:

- A plant schedule nominating each species.
- Plant spacings.
- The numbers of plants required.
- The size of each plant to be used at the time of planting, together with the anticipated height of each plant at maturity.

The Plan should identify and include any adjoining road verges. The Plan must be submitted and approved prior to implementation.

Landscaping and any irrigation are to be completed in accordance with the approved plan(s) prior to occupation of the development and thereafter maintained to the satisfaction of the City of Busselton.

To ensure compliance to the Landscape Design requirements, please read in conjunction with City specifications;

Section 9a Landscape General Guidelines.

Section 9b Landscape Irrigation.

Section 9c Landscape Urban & Rural Road Reserves.

Section 9e Landscape Plant Species.

Section 9f Landscape Environmental Weeds.

Section 9g Landscape Entry Statements

3.5 Constructed Water Bodies

Any constructed water body will require approval from the Department of Water prior to further consideration by the City.

All constructed (closed) water bodies are subject to detailed design and ongoing monitoring and management practices to ensure the water quality remains healthy by artificial means. This includes oxygenation by pumps, monitoring and analysis of water quality and other periodic maintenance procedures. A Lake Management Plan may be required showing detailed costs for maintenance over a 20 year period to ensure economic sustainability from the subdivision rate base.

There are considerable issues in the design and management of constructed water bodies or closed systems on an environmental and economic basis and include but are not limited to:

- If lined, replacement costs through liner deterioration / vandalism or interim leakage of liner as unknown future maintenance and capital cost and subsequent residents complaints (particularly if paying Specified Area Rates).
- If unlined, reduction in determined water heights by leaking through clay material membrane, drought changing water table, addition, encroachment and spreading of nutrients through groundwater contamination, unknown maintenance costs and subsequent resident complaints (particularly if paying Specified Area Rates).
- Liner can 'bubble up' from groundwater or gas build up if lake height cannot be managed and further infrastructural works will be required ie underdrainage and gas valves.
- Past practice reliance as a stormwater detention changed by City and State adopted principles of Water Sensitive Urban Design for retention and infiltration.
- Introduction of water birds outside normal migratory paths and subsequent contamination of water by bird droppings, feeding birds (one loaf of bread can cause algal bloom in a swimming pool) and mixing with groundwater triggering high Phosphorous levels within a closed system and subsequent algal blooms and death of introduced water birds.
- Dead water birds during summer if conditions are favourable for botulism bacteria (bread provides ideal conditions for botulism bacteria).
- Creating a catchment for litter (becomes evident and unsightly quickly) and subsequent City management to remove (if not on edge of water body).
- Stratification of water (deeper than 600 mm) creating low oxygen levels and potential of killing of any introduced marine life (mosquito larvae eating fish).
- Algal blooms can be toxic to pests (blue/green algae).
- Lowered water heights and subsequent exposure of bottom surface soils below height of vertical walls will provide ideal breeding for midges.
- Mosquito breeding under algal blooms or on edges of water body if water heights are below bottom of vertical wall and subsequent potential for disease spread of Barmarah forest and Ross River viruses.
- Ongoing costs to the City for monitoring, sampling and laboratory testing of water quality for various nitrates, phosphates, oxygen levels, light absorption, heavy metals and other perceived or known contaminants.
- Foul odours can occur from low oxygen level stratified water when disturbed or mixed, creates through bacteria development, hydrogen sulphide (rotten egg gas) and releasing bound nutrients and subsequent algal blooms when released nutrients reach sunlight.

- Specialist consultants will need to be employed by the City to address concerns of water quality, hydrology and engineering as an unknown cost.
- Known possibility of future restrictions in water allocation to keep water body topped up in the summer months from natural evaporation to maintain determined heights.
- If future water licence cannot provide sufficient volumes and are unavailable for evaporation management or replenishment, then the water body may need to be removed.
- If residents build within 200 metres of a water body notification will be required on property title advising of potential midge problems and subsequent management by the City.
- Ongoing concerns and risk of children drowning from falling into constructed water body, particularly if vertical walls are in place with no fencing.

If poor water quality results in the Australian and New Zealand Environment Conservation Council (ANZECC) trigger values not being met, then the whole water body volume must be replaced within a period of 6 days during the summer months from a good quality water source to improve water quality, this obviously will require large volumes of drainage and a large volume of replacement water and approved and licensed resource requirements. Where a developer provides irrigation within a POS from a licensed (long term with proven sustainability) bore and the bore cannot provide enough pressure or volume to irrigate the POS area, then a storage area will be required to provide suitable volumes and pumping pressure of water. The optimal time for water delivery to reduce evaporation loss is usually during the hours of darkness.

As an alternative to a constructed water body, the preferred storage method is by colorbond® or similar tanks either singularly or in series with a suitable membrane and situated at natural ground height. Where conditions allow for lowering into the ground (above groundwater level) and/or covered with soil then tanks will need to be made of a suitable material ie concrete or similar that can withstand moisture and earth fill.

Storage tanks can provide true calculations to irrigation volumes, required storage capacity and replenishment and provides monetary cost efficiencies and suitable water conservation outcomes.

Where concerns are expressed as to the 'above ground' tanks visual aspects and susceptibility to damage from graffiti and or vandalism, preference will be for lower profile tanks and vegetated bunds surrounding the water storage units with further minimisation by profiling below ground but above invert levels of surrounding drainage with drainage connections to tie into surrounding drainage systems. Any graffiti can be minimised by respraying to same colorbond® colouring as tank.

3.6 Landscape Buffers

Landscape Buffers are used in subdivisions to provide ecological links, minimise the visual impact and/or provide some noise mitigation of a development between adjoining transport corridors or other instances where the visual or environmental impact takes away from the natural, cultural character or social amenity of an area. Buffers can work both for the people outside the subdivision providing a green belt as well as the people inside a subdivision by helping to reduce noise or screening visually unappealing infrastructure.

Landscape buffers must be visually impermeable once established excepting where a view shed is identified in the planning phase (refer to WAPC Visual Landscape

Planning in WA) and will consist of all SW local plant species including a range of trees, shrubs and groundcovers. Landscape buffers will be a minimum 20 metres wide to achieve their function and can be up to 60 metres in width in the case of adjoining a main road in residential areas or an even higher width for industrial or commercial.

It may also be required that the buffer forms part of an environmental link as a fauna and flora corridor, in this instance the buffer needs to contain species that provide shelter/cover and a food source for the fauna expected to use it. As part of buffer design, buffers can also accommodate other services or uses through 'multiple use corridors' where conformance to the requirement is not affected. The buffer should be separate to any adjoining residences to minimise risks through fire or security and where most successful are situated between two roads.

Where noise mitigation is the main objective, then materials that provide absorption or deflection of noise will be the focus. This can be by masonry or stone walls, earth bunds or other materials that provide deflection or absorption of noise. **The Buffer zone will be required to be assessed and tested by an acoustic specialist to determine the requirements of sound protection needed and generally acoustic bunding by the use of an earth bund is the preference.**

If a wall has been determined then it is important to maintain a sense of scale and finishes in the selection of suitable materials for any constructed wall to enhance the area without providing open spaces for graffiti and blandness of construction.

Provision for artists or similar to complement the finish with interpretive works reflecting natural aspects of the adjacent landscape shall be considered appropriate.

3.7 Water Supply and Efficiencies

Water is a critical factor in the development of any POS. Strategically when in the initial stages of development planning it is imperative to understand water source sustainability measures in calculating availability of the resource for the future. The City in most cases prefers the priority use of water to playing fields or high usage areas only. There are opportunities within POS areas to provide alternatives to irrigated grassed areas to reduce high water consumption against dwindling SW rainfall figures.

Any irrigated water for POS areas shall be taken from a bore only and will be licensed to provide enough irrigation (long term - this must be guaranteed) to meet the demands of the landscape design. No scheme or town water shall be used for the irrigation of public open space unless for an establishment period of 2 years (minimum 2 summers) and the water to then be disconnected by the developer prior to hand over to the City. Where small areas are used for irrigation of turf by potable water, these may be approved subject to proven economic costs within the whole of development.

Water licenses will need to be in the name of the developer while under a maintenance period and shall be transferred to the City upon completion of the maintenance period and prior to hand over to the City. A water licence should provide a minimum of 10,000 k/l per ha to ensure irrigated POS have enough water, if not, irrigated areas are required to be reduced according to the resource prior to City acceptance of the POS.

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Within any development where POS is situated and there are potential limitations in the provision of irrigation water, landscape design is encouraged to improve sustainability of the resource. Some of the main types of landscape design that the City encourages include:

- Areas of local native species vegetation planted in winter - this can have temporary, minimal or no irrigation for the first 2 years of establishment preferably as seedlings. Following the 2 years (inclusive of replants after 1st year) native species generally can survive seasonal fluctuations in rain and are adaptive to the local conditions.
- Provision of various types of alternative pavements - provision of hard surfaces (permeable where possible) brick paving, coloured cement finishes, tile, limestone, gravel, coloured asphalts or stone pavements integrated with restricted 'playing areas' of seasonally watered (rainfall) lawn
- Planting of tree species in close proximity as a canopy to encourage shade areas for sitting/playing with paths and mulch.
- Playground areas defined with washed white sand surrounded by mulched areas planted with trees and suitable furniture and pavements to the perimeter of the sand area.
- Use of space developed with artistic sculptural elements including use of alternate pavements, structures and art with large expanses of understorey (<750mm) native garden beds and parkland trees.
- Seasonal maintained larger grassed areas through non irrigated Kikuyu (or similar drought resistant varieties) and slashed dependant on climatic and seasonal conditions.
- Drainage design into POS providing for basin sedge/rush planting, boardwalks and parkland planting.

The landscape concepts described above are just some of the ways in which irrigated water can be removed in a development to provide sustainability of the POS without the supply of any water.

Within any POS or verge area, the City promotes the use of local plant species for provision of fauna habitat for protection and enhancement of fauna species and local character and diversity of flora. Where grass areas are needed then both Kikuyu and Couch or a combination provides a hard wearing grass with minimal management.

As part of water efficiencies when developing POS areas and as part of the reporting requirement from the Dept of Water (bore license), concise calculations to support the cost and use of bore water are required. Similarly if potable water is considered, then cost efficiencies of water will be required by the City. Timing for defining irrigation requirements are at the Landscape Strategy and the Detailed Area Plan (DAP) Landscape Plan stages.

A tabled spreadsheet detailing the amount of irrigation for each POS should be set out to identify by assemblage of POS areas and the actual surface areas (in square metres) to identify correct water expectations and use as these are developed. Where it is identified that water use against a licence or mains water has the potential to exceed the programmed limits of use then alternatives to irrigation must be considered prior to the development of POS areas with limited long term resource availability.

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Actual areas set out for irrigation is required to demonstrate the design does not go beyond the limits of the water supply. Where irrigation is temporarily placed for the establishment period only and is temporarily installed and removed by the developer prior to hand back to the City and the site is considered viable to continue without irrigation (native planting only) then irrigation calculations will not be required.

The table for **each** or sole POS within a subdivision should be set out on an Excel spreadsheet with all POS shown for the development guide plan identifying:

Basic Unit Definition (Show total size per POS in square metres)

- Percentage of irrigated turf area.
- Percentage of irrigated garden beds.
- Percentage of revegetation planting (and if irrigated).
- Percentage of unirrigated area both individually as grass or garden.

Forecast (per each individual POS and cumulative amount)

- Anticipated establishment level usage amounts in total kilolitres used (first 2 years).
- Anticipated usage amounts for remainder of maintenance period in total kilolitres used (2-5 years - where applicable).
- Anticipated usage amounts in kilolitres per annum at City handover.

The table will then require further details as the maintenance period progresses and a report to the City at the intervals shown below:

Stage Completion (per individual POS completed)

- Actual establishment level amounts in kilolitres (first 2 years).
- Actual remainder of maintenance period amounts in kilolitres (2-5 years - if applicable).
- Actual amounts in kilolitres at City handover.
- Where a POS will be irrigated by a bore, reporting shall be in kilolitres per annum.
- Where a POS will be irrigated by potable water, reporting shall be with attached water invoices as verification showing cost and kilolitres.

Where the tables for each POS expected usage may exceed the total or the individual POS capacity in alignment with the water license or cost of potable water, then alternative landscape design will need to be implemented or retrofitted to adjust the capacity of water delivered. The City reserves the right to shut off any irrigation system at any time if costs or kilolitres used are above those specified prior to implementation.

To further identify the amount of water for allocation purposes over a POS, the following irrigation information is provided by the Department of Water for the South West Region as a guide only - The use could vary greatly dependent on management, soil types, climatic conditions, etc.

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Public Open Space Water Use Guide

Table 2

Description	Area Covered (m2)	Amount kilolitres per annum
Grassed Erosion Control Oval	10,000 m2	5,000
Grassed Green Oval	10,000 m2	7,500
Grassed Tennis Court	10,000 m2	9,000
Grassed Golf Course	10,000 m2	10,000
Garden	10,000 m2	10,000
Garden - trickle system	10,000 m2	6,600

Alternative water for irrigation from recycling processes will be considered highly by the City. These may be by recycling and treatment of grey water within a subdivision (on site) or treated 'sewage' water from Water Corporation treatment plants.

3.8 Maintenance Categories of the Landscape Design

In all instances of POS, the determined land set aside in a development is ceded as public open space and is only a condition of subdivision that the land is landscaped. The standard of landscape should not be above a standard requirement in enhancing an area and providing social amenity unless the developer seeks a Specified Area Rate.

Inappropriate high maintenance and high resource use design of POS can be financially detrimental in the overall future management of the POS to comply with sustainability and conservation initiatives. Where maintenance targets exceed the requirements of financial and resource sustainability, the developer will be required to retrofit the POS to a lower maintenance level.

It must also be reiterated that the City will ultimately be the manager of the land and any design that is not appropriate will not be approved.

All areas that are to be ceded to the City must be shown through a life cycle cost benefit analysis and that the City will not receive at handover, unsustainable POS areas for life cycle liabilities.

There are three (3) main categories of landscape development within a POS. In most developments the two most common forms of landscape treatments for POS within the City are Category 2 & Category 3, with Category 1 as a more specific site development.

- **Category 1**

This category relates to reserves that have a high profile which require a high level of maintenance for whole of community benefit.

- **Category 2**

These are passive activity areas with a medium to high level of maintenance required and include elements or all of the following; trees, shrubs, lawn areas, mulched gardens, infrastructure and reticulated irrigation and generally more detailed in appearance. Category 2 normally requires Specified Area Rates to cover the cost of maintaining the POS or is offset with lower costs (Cat 3) to less strategic surrounding POS within the development area..

- **Category 3**

These areas are generally not irrigated and require minimum maintenance compared to Cat 2 but may include all the elements of a Category 2 but without major water allocation such as large irrigated lawn areas and a more informal design and management.

The use of native plants and 'water wise' design is encouraged in all categories. It should be noted that a single reserve or area might contain more than one category of landscape treatment. Where there is more than one category as part of a POS development, this will need to be financially assessed against the anticipated rate base and lot yield of the subdivision for future City maintenance delivery and is discussed under Maintenance Agreements.

Category 1

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This Category in general relates to high amenity areas that may impact on civic spaces or other high public usage areas that require long term management; and may include a 40 year landscape maintenance annuity. Examples are Busselton beachfront, Killerby Park (Busselton Visitors Centre), Dunsborough Lions Park and Mitchell Park.

Category 2

This is the most common type of landscape development for larger subdivisions that rely more on 'high end' marketing due to the size of the development. Marketing may entice the developer to provide more sophisticated landscape development including large expanses of irrigated lawn, lakes and more 'exotic' flora to provide a potential lot purchaser of an 'oasis' location. Unfortunately this puts a strain on natural and future City economic resources, unless higher rates to cover the additional cost of maintaining the subdivision from the residents within the subdivision are implemented.

Past experience after the developer has completed a designated maintenance period leaves the City responsible to maintain Category 2 POS at a standard higher than the City's ability to deliver that standard. It is the requirement for all developers to reduce the maintenance costs to under the rateable limit of the lots prior to City hand back.

Higher level POS design may involve a 5 year maintenance period for the developer and a subsequent maintenance agreement and downgrade prior to hand back to City if required.

Where the use of Category 2 is preferred by the developer, there are management hold points required particularly as it relates to higher maintenance costs triggering Specified Area Rates (SAR) in the development of Category 2 landscaping. The hold points will need constant reviewing in the development of the POS areas including road reserves, these include but not limited to:

- Ensure there is adequate irrigation water at a strategic level (Landscape Strategy) prior to commencement of landscape design of any POS ensuring sustainability for the future (DOW water license). The City will need written assurances that there will be adequate water for continuation of irrigation post maintenance agreement.
- Ensure that maintenance costs in relation to individual and overall POS are within an acceptable budget for the City to maintain from the subdivision rate base and prior to the instigation of Specified Area Rates (SAR). This will involve a lot yield calculation from the DGP or Detailed Area Plan or subdivision to ensure future City maintenance can be budgeted through standard rates for that particular area.

Category 3

The City will encourage developers to design POS and verge areas as Category 3; with Category 2 sections within a POS only being created where higher visitation or use by the Community is anticipated i.e. playgrounds and immediate surrounds and any other Community benefit sites by agreement with the City.

Category 3 is the most common level of landscape development for smaller subdivision POS areas and should be 'marketed' as the most appropriate for larger subdivisions, limiting City future liability to a more sustainable level.

This Category can be considered the simplest to manage on a maintenance level and financially and environmentally more sustainable. Maintenance periods for the developer are usually 2 years (minimum 2 summers) dependent on planning conditions and the size of the development. The 2 year period relates to the start of winter rains following the 2 summers. There is opportunity to provide temporary water while establishing a new landscape however the developer must remove the watering system and meter from the POS prior to the City accepting the POS.

3.9 Maintenance Agreement

A maintenance agreement may be required as part of WAPC development conditions when seeking subdivision. Typically with larger developments there may be a condition to maintain the Public Open Space for a set period of 5 years unless otherwise stated.

As part of the development of a Maintenance Agreement it will be necessary for the Developer to submit a detailed and itemised account (spreadsheet) of the requirements and budgets directly contributed towards the management of a POS against set targets, measurements and /or benchmarks.

A maintenance agreement is usually developed by the proponent's lawyer or similar as a bona fide agreement and submitted to the City for approval or feedback dependent on the complexity of the Agreement.

The maintenance agreement should identify all landscape management of POS relevant to a Detailed Area Plan (DAP) as a minimum within a larger development rather than several individual agreements covering singular POS areas.

Where the developer cannot provide a suitable legal agreement, the City may be able to offer legal services for the provision of writing an agreement subject to the cost of the preparation of a maintenance agreement. A maintenance agreement should be approved and signed off by the City and the Developer prior to lot clearance of a subdivision.

The Maintenance Agreement should identify and cover all relevant information in relation to the implementation and management of a Public Open Space and include but not limited to:

The Recitals -

- Plans and Schedules.
- Maintenance Schedules.
- Licences.
- Risk management.
- Management and maintenance practices.
- Standard of Works.
- Maintenance periods.
- Any alterations to a maintenance period.
- Requirements for expiry of maintenance period.
- Maintenance budgets.
- Annual reporting including a cost report and irrigation report.
- Insurances.
- Recovery by City of Busselton.

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- Performance or Maintenance bond.
- Water requirements including water licence.
- Entry by City of Busselton.
- Dispute Resolution.
- Notices.
- Variation.

Start of Maintenance period

The period for maintenance of a POS in most situations starts at Practical Completion (PC) of the landscaping or the clearance date of the subdivision whichever is the latter. Practical Completion is defined as completion of the landscaping works based on 95% completion of all landscaping work by value and no less than 95% completion of all 'soft landscape' plantings (grass, shrubs and trees) to the satisfaction of the City.

Maintenance Items

The Developer in consideration of a landscape design should ensure that the maintenance of a POS will need to identify all of the items required to maintain a site to a condition acceptable to the City. Types of maintenance items that need to be considered in the development of landscaped POS and road reserves include but are not limited to:

- Mowing /edging.
- Weeding / pruning.
- Paving cleaning.
- Mulching touch up.
- Fertiliser lawn and plants.
- Herbicide lawn and plant areas.
- Irrigation.
- Dead plant replacement.
- Furniture maintenance.
- Playground maintenance.
- Theft / vandalism.
- Turf topdressing.
- Storm damage.
- Lake water testing.
- Street tree management.
- Structure cleaning and building maintenance
- Cost of scheme water.

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Table 2 (Example only) of a maintenance schedule

Maintenance Description	No. of visits per annum No.	Per visit \$	Unit	Per annum unit rate \$
Mowing/edging high standard			M2	
Mowing /edging low standard			M2	
General weeding, pruning, tidy to main areas			M2	
General weeding, pruning, tidy to revegetated areas			M2	
Top dressing of lawns			M2	
General cleaning to hard landscaping areas			M2	
Additional mulch cover of 30mm every 2 years			M2	
Fertilising of lawns			M2	
Herbicide control of lawn weeds			M2	
Inspection of lawn and garden Irrigation			M2	
Cost of Scheme water			quarterly	
Plant replacement			As required estimate only	
Furniture			As required estimate only	
Structures			As required estimate only	
Lighting			As required estimate only	
Theft or vandalism			As required estimate only	
Bore servicing			each	
Lake water quality tests			each	
Street Tree management			each	

3.10 Retro fitting and / or Downgrading.

As part of the approval process for Landscape Strategies, Detailed Area Plan Landscape Plans and Landscape Implementation Plans, it is important to identify infrastructure that is considered sales or market oriented infrastructure development rather than long term sustainable infrastructure. This would be for all future City managed areas within POS including foreshore reserves or road reserves.

In all instances, it is the City's intention to find consensus in the approval of both landscape and engineering plans to prevent changes to the development of POS wherever possible at the end of a maintenance period. Where the Developer wants to provide POS development to a standard higher than City expectations for sales and marketing purposes and the City does not agree to the higher standard, then an attachment to the Maintenance Agreement should identify where retrofitting or downgrading will occur and the re works carried out prior to hand over to the City.

Where the higher standard is identified, the retrofitting or downgrading should form an attachment to the Maintenance Agreement and also be highlighted for public knowledge for lot owners or potential lot owners within the subdivision. All retrofitting and /or downgrading shall be carried out prior to the end of the maintenance period to allow bonds to be returned on completion of the Maintenance Agreement.

During the life of the maintenance agreement there may be particular requirements for retrofitting or downgrading that at the time of the Practical Completion (PC) may not have been identified as an issue. Where an issue is determined following PC then every effort to reinstate or rectify should be undertaken by the developer. Where the developer does not rectify an issue that the City determines as a risk to public and private assets, infrastructure, the community or the environment, then the City may rectify from the maintenance bond held. The types of downgrading or retrofitting may include but not limited to:

- Blocked culverts ongoing and require stabilisation of surrounding soils and mulch.
- Swale inverts not adequate to compensate rainfall.
- Water infiltration to swales/detention or retention basins not performing to maximum 96 hour 'holding period'.
- Prevention of water from roads entering road reserves over flush kerbs through surrounding high soil / mulch profiles.
- Constructed water body water levels lowering through leakages or evaporation and not enough water resources to continually 'top up'.
- All entry statements.
- Large event stormwater overland flow path altered or constrained.
- Exotic trees or shrubs not performing through drought intolerance or disease or considered inappropriate.
- Vegetation roots interfering with drainage or other infrastructure.
- Blocked soak wells or pipes from leaf or sand build up.
- Excessive nutrient runoff entering water bodies and subsequent algal contamination.
- Bore, aquifer or pump not providing adequate water supply.
- Constructed water body edges considered safety concern.
- Loose materials ie drainage rock spalls scattered on roads, paths or used as missiles.
- Community (within subdivision or overall development) lobbying for particular changes ie health, environment, social and engineering.
- Custom or manufactured furniture or artworks or any other infrastructure showing signs of deterioration.

Infrastructure, in this instance incorporates where landscaping treatments are part of but not limited to the following;

entry statements, hard and soft landscaping and engineering components including - drainage, kerbing, paving, surface treatments, roads, paths, conservation areas, playgrounds, furniture, playing surfaces, irrigation, planting, lawn areas, decks, bridges, shade shelters, artworks and any other infrastructure constructed by the Developer in a subdivision.

3.11 Drainage Corridors

As part of 'Liveable Neighbourhoods' (Latest Version), provision of drainage within a POS can, where practicable, be provided in conjunction with an urban water management system. The management system should be based on Water Sensitive Urban Design (WSUD) in public parkland areas where usability for recreation purposes has not been compromised or where conservation values are not compromised.

To determine the extent of a 'treatment train' in the development of WSUD, further reading should be undertaken with the Dept of Water's document 'Stormwater Management Manual' and 'Better Urban Water Management'.

It has been recognised that the provision of drainage outfall, storage and disposal areas is difficult in the City of Busselton due to flat grades, high ground water tables or soil types and restrictions imposed by the Water Corporation, Department of Water and the Department of Environment and Conservation (DEC) with respect to discharging stormwater into river and wetland systems.

Where the developer can demonstrate no other acceptable provision of outfall, maximum use of space is limited to 20% and maximum 24 hr retention for 1:5 year event, then this can be accommodated providing all planning and engineering requirements are to acceptable City standards and approved prior to commencement of detailed design.

The City will give due consideration to development applications proposing to establish drainage compensation and nutrient and silt 'treatment trains' and detention basins on proposed or existing public open space reserves where such applications comply with the following:

- (a) It can reasonably be demonstrated that there is no other acceptable means of providing for drainage;
- (b) The proposal to use the recreation area for drainage is approved by the City and submitted with a subdivision application to the WA Planning Commission;
- (c) In the case of a planning condition to develop the POS by landscaping to a reasonable standard and including the integration of the drainage corridor as part of the landscape design.
- (d) The drainage purpose does not impose on the minimum area required for recreation within a development;
- (e) Mosquito management is addressed; and
- (f) The drainage infrastructure is not detrimental to the use of the reserve or to flora and fauna.

3.12 Playgrounds

Playground equipment may be installed in a public open space development; these sites will need to be identified strategically to ensure local parks and neighbourhood parks are considered. These parks are for walkability and close by destinations and promote alternatives other than vehicle use and should be encouraged for play equipment.

Modular units (typically plastic compounds built to Australian standards) can be provided where a need is identified by the City and / or the Developer. Ensure that equipment is from a reputable company with good parts backup should parts be needed in the future. No Copper, Chrome, Arsenate (CCA) treated pine to be used in the construction of a playground.

Where a playground design is proposed and is not a modular type, then further input into the design for compliance shall be required from a qualified risk assessor and / or a structural engineer as a minimum, dependent on the structure.

The City encourages the development of artistically and more challenging designed playground equipment such as climbing structures / artworks / etc; these works are subject to structural, maintenance and safety considerations. The preference for non modular type of playgrounds should be considered for all parks if demonstrated that safety and replacement costs are addressed. All larger neighbourhood parks should provide some play equipment.

In the establishment of a site, ground works shall include all footings to be covered to a depth where no footings can be exposed. Suitable soft fall arc from any point of the playground with no impediments and a defined perimeter (outside soft fall arc) is provided to ensure encroachment of vegetation or other materials is prevented. Shade elements should be considered in the development of all playgrounds, this can initially be from shade cloth structures with strategic planting of trees to provide alternative shade in the long term.

All equipment and its installation shall meet Australian Standards and the Occupational Health and Safety Act and Regulations. Relevant Australian Standards include but not limited to:

- AS2555-1982 Supervised Adventure Playgrounds - Guide to Establishment and administration.
- AS4685.3-2004/amdt 1-2006 Playground equipment - particular Safety requirements and test methods for slides.
- AS/NZ 4422:1996 Playground surfacing - Specifications, requirements and test method.
- AS4685.1-2004/Amdt 2-2008 Playground equipment - General Safety requirements and test methods.
- AS/NZ 4486.1:1997 Playgrounds and play equipment - Development, installation, inspection, maintenance and operation.
- AS 4685.2-2004/Amdt2-2008 Playground equipment - particular safety requirements and test methods for swings.
- AS4685.4-2004/amdt 1-2006 Playground equipment -particular safety requirements and test methods for carousels.
- AS4685.6-2004/amdt 1-2008 Playground equipment-particular safety requirements and test methods for rocking equipment.

3.13 Natural Areas and Cultural Features

It is important within the City to protect and enhance natural and cultural features of the landscape and the social values that derive from a sense of place. Within any development there are features that may present an historic link both natural and/or social that should be retained. Careful planning both in urban and engineering context need to be considered to protect and enhance any features. Types of features are numerous and will be dependant on the individual developments, but some examples are:

TABLE 3.

Natural Areas	Cultural Features
Creeks, brooks, rivers, streams, coast and the associated foreshores.	Farmhouse or outbuildings ruins with good example of local stone/timber etc.
Vegetation in good condition or containing a poorly represented complex.	Indigenous site - past camping area, artefact scatters, ceremonial ground etc.
Individual stands of local species trees (significant).	Old gardens with examples of early settler tree and plant species.
Ridgelines / valleys of natural vegetation species.	Historic travellers well, road or meeting place.
Rock formations, hollows, hillocks, escarpments, undulations, viewpoints etc.	Old rail alignments, mills, group settlement houses.
Wildlife corridors.	Previous use sites that reflect past practices.

Natural areas and cultural features should be included in a POS and addressed at the planning stage of a subdivision. This will be dependent on the locality of suitably located parklands placed for 'walkability' and convenience. Where specific sites are identified and do not 'fit' into POS then further opportunities to preserve or enhance those features or areas may be through additional POS allocation or provision of restrictive or conservation covenants on private lots dependent on the specific feature and public accessibility.

Cultural Features for inclusion into POS must be taken on a case by case basis and need to be identified early in the development design stage. The relevance of any particular cultural feature will be dependent on the previous history in context to individuality of the feature and the relevance to the Community. Where there is Special Environmental Areas (SEA) or a Heritage listed asset, then these will need to be conserved or protected irrespective of inclusion into a POS but preferred wherever possible.

3.14 Safety

As part of the 'Designing Out Crime' initiatives by the WA Office of Crime Prevention and also known as CPTED, an acronym for Crime Prevention Through Environmental Design, all POS areas within a subdivision are to be designed to allow for passive supervision from adjoining residences. This is generally by accepted practice of the placement of perimeter streets around the POS and the use of permeable fencing (surveillance) to the adjoining lots.

For vegetation planting to create a safe environment with suitable habitat, the simplest method is to provide lower understorey planting of less than 750mm in height and the use of trees for canopy shade and under pruned to 2.4 metres. Middle storey planting can be used for wind protection and visual screening where screening does not restrict surveillance from surrounding residences.

Other considerations in safety through CPTED are addressed throughout this document.

3.15 Lighting

Provision of lighting to parks will be required where safety of the residents living in the locality needs to be addressed. The main consideration for provision of lighting is where connector or linear POS are situated. This could be between adjoining roads,

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neighbourhoods or where dual use paths align with a strategic link and carry pedestrian and cycle traffic through urban areas. Each POS will need to be assessed on its merits for lighting but preference for pedestrian / cycle links to other neighbourhoods; commercial districts or major transport routes are considered a priority.

The main considerations for lighting as set out in 'Designing out Crime' initiatives by the WA Office of Crime Prevention for appropriate and integrated lighting are:

- Indicating safe connections.
- Ensuring visibility to 15 metres.
- Encouraging or discouraging use.
- Ensuring visibility for all users - pedestrians, cyclists, wheelchairs, prams, motorists.

Lighting requirements are to be to Australian Standards and the relevant Categories for the different uses, ie pedestrian footpaths, civic spaces and roads. The following Australian Standards will apply when designing any lighting and include but not limited to:

- AS/NZS 1158.0:2005 Lighting for roads and public spaces – Introduction.
- AS/NZS 1158.1.1:2005 Lighting for roads and public spaces - Vehicular traffic (Category V) lighting - Performance and design requirements.
- AS/NZS 1158.3.1:2005 - Lighting for roads and public spaces - Pedestrian area (Category P) lighting- performance and design requirements.
- AS/NZS 2560 Sports Lighting.

3.16 Structures

Structures in POS areas can be considered under various categories ie Regional Open Space, Foreshore Reserves and POS. There may be requirements for structures that are considered expensive and or necessary in the provision of public facilities such as ablution buildings, change rooms or other community facilities that are considered strategic in location. Where community facility buildings are specifically identified for POS areas or foreshore areas, these will need to be part of the planning process and also part of planning negotiations in relation to the development and any developer contributions are considered in the planning process.

For any structures that are not supplied as part of an identified Community Facility, then the structure must perform some objective as part of a POS or foreshore design. These structures generally fall into the design category of shelters and are considered important in the retention of shade particularly in POS areas that have minimal shade from existing trees.

All structures designed by the Developer must be compliant to either a building licence or structural certification or both dependent on the scale and use of the structure. All structures must be functional in their use and provide the Community with benefits, particularly shade from the sun and shelter from the rain. All structures performing minor or no functionality may not be approved unless provision of shade and shelter is provided.

Where the Developer considers the structure has other objectives that are more artistic in design and form is the preferred outcome rather than function, this can only

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be considered on its merits or subject to removal as part of the retrofitting or downgrading at the end of the maintenance period. Issues that should be considered include:

- The non functional structure may form part of a sales and marketing approach to the development and does not reflect any real benefit to the Community once the development has been completed and should be removed at the end of the maintenance period, ie entry statements.
- The non functional structure provides Community expression through artistic merits and reflects on the value of the people / area and should be retained.
- The non functional structure has a short life span (less than 10 years) and should be removed at the end of the maintenance agreement.
- The non functional structure is considered unsafe or has other Community / City concerns and should not be approved.

Where structures are specifically designed for shade or shelter then this type of structure is generally accepted providing materials, colouring, design styles and replacement components align with the City's maintenance processes and objectives. Where structures are custom made and considered by the City expensive to repair or maintain beyond the life of the maintenance agreement or after the maintenance period has expired, the City reserves the right to remove or alter the structure at any time.

Typically structures with solid roofs are designed for picnic tables or bench seating near playgrounds, BBQ areas, viewpoints or general rest areas. Structures may also be to complement playgrounds and may be made of shade sails and steel poles.

Where the structures are walls, approval can only be to low heights and must provide a function (useable) and be part of an overall POS design. Stand alone walls are limited to 1.2 metres from natural ground height and retaining walls limited to 0.5 metres from natural ground height.

Where Community facilities are to be provided, then consultation with the various City directorates for a manageable outcome in location, design and function will need to be addressed. This may also entail Community consultation if the facility will be used for different applications.

In all instances the City's requirements are for 'As Constructed' Drawings of the structure at Practical Completion.

As part of all structural designs, compliance to the relevant Australian Standards on Key Structural Standards and Key Building Standards shall apply; these include but are not limited to:

- AS/NZS 1170.0:2002 Structural design actions - general principles.
- AS/NZS 1170.1:2002 Structural Design Actions - permanent, imposed and other actions.
- AS/NZS 1170.2:2002 Structural Design actions - Wind Actions.
- AS1428.1 - 2001 Design for access and mobility - general requirements for access - new building work.
- AS/NZS1554.1:2004 Structural steel welding - welding of steel structures.
- AS1684.1 - 1999 Residential timber framed construction - design criteria.

- AS1684.2 - 2006 Residential timber framed construction - non cyclonic areas.
- AS 2870 - 1996 Residential slabs and footings – Construction.
- AS/NZS 3000:2000 Electrical Installations.
- AS/NZS 3500.1:2003 Plumbing and drainage - water services.
- AS/NZS3500.3:2003 Plumbing and drainage - Sanitary plumbing and drainage.
- AS3600-2001 Concrete structures.
- AS3660.1 - 2000 Termite management - new building work.
- AS3700 - 2001 Masonry structures.
- AS4100 - 1998 Steel Structures.
- AS4678 - 2002 Earth retaining structures.
- AS5100.1 - 2004 Bridge design - Scope and general principles.

3.17 Public Artworks

The City encourages the inclusion of public and community art within POS by Developers.

Public art is defined as being, 'site-related and place-responsive art in the public domain which includes the process of engaging artists' ideas, enhances the built and natural environments and adds value to urban character and cultural identity through the use of a diverse range of art forms and design applications.'

Art works can take many forms, either as part of the fabric of a building or be separate objects located as part of a building or within POS.

Art works incorporated into the fabric of a building could include stained glass window treatments; mural or mosaic walls, floors or ceilings; special inserts into the floor; shade structures; lighting design; or electronic installations.

Art works in POS could include sculptural works in long-lasting materials such as bronze, steel or concrete, artist-designed public seating or playground equipment or pavement art. Entry Statements are not considered art.

The City will work with the Developer to achieve the best results for a Public Art Project. It is recommended that a professional art consultant is engaged at the earliest stages of concept planning to develop a brief, determine selection process, draft a contract, and liaise with all parties including the City to monitor the work in progress.

Artsource is a non-government agency representing Western Australian visual artists and can offer advice and contacts, including a registry of over 300 artists and art consultants to choose from. The following areas should be addressed in the contract and proposal:

- reference to the intent of the design as the basis for the completed work.
- time schedule.
- budget, including a payment schedule.
- supervision and reporting requirements.
- insurance and workers' compensation.
- use of third parties.
- safety and industrial issues.
- maintenance responsibility.
- ownership of the work.

- copyright matters.

Where appropriate, an invitation should be extended to community members to participate in the artwork process to ensure that the work links to cultural identity. This can be facilitated through drawing sessions, cultural mapping processes to identify themes or similar processes.

The City of Busselton will assess the artwork based on the following criteria:

- Durability of materials.
- Legality and safety.
- Accessibility by the public.
- Consistency with objectives of Percent for Art Policy (2007).
- Adherence to any special conditions applied by Council.

Artworks that are low maintenance, robust, durable and resistant to vandalism will be encouraged and this will form part of the assessment of all proposals. Developers will be required to present the City with a maintenance schedule.

3.18 Planting and Irrigation

In all City landscaped areas, excepting the CBD areas of Busselton and Dunsborough where alternatives may be provided through separate urban initiatives, the objective within all POS is to retain and plant local native species. This is to support the regions biodiversity of flora and fauna and protect valuable water resources and water quality as much as possible and forms part of the City's initiative towards environmental and economic sustainability.

Plant Species lists of the most common local species is available from the City (Refer Section 9e – Landscape Plant Species). (Refer Section 9a Landscape - General Guidelines).

Where irrigation of a reserve is approved by the City, the designer shall determine from the City's authorised representative preferred sprinklers, valves, cabinets, hoses and pipes, controllers, electricity and other equipment, and specify identical or compatible equipment. A schedule of preferred equipment is provided under (*Section 9b - Landscape Irrigation*).

When work is completed an 'as constructed' plan of the irrigation is provided for City records, preferably in an electronic format with suitable comparative software. The finished planted landscape must be the same as the approved landscape implementation plan for the subdivision.

3.19 Furniture

Typically furniture items can be described as combination picnic tables, bench seats, litter bins and other furniture and can also include items such as bike racks, tree surrounds, etc (not including structures).

Where picnic combinations and bench seats are used, the design of these may be to a proposed City style and must be approved prior to installation. The City reserves the right to approve what type of furniture is used if the furniture the developer puts

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forward does not meet maintenance requirements or other fundamental design concerns.

Where other styles of furniture are proposed by a developer as part of a marketing theme or development style, then consideration must include the long term ability for the City to continue with the furniture at the end of the maintenance period. The proposed furniture will either be:

- Manufactured or;
- Custom made.

Where manufactured furniture is proposed, the cost of the furniture per item must be supplied and accepted by the City as a suitable product. Suitability of the furniture can be assessed against:

- The replacement cost of the furniture in comparison to similar styles.
- The ability and cost to repair and supply spare parts.
- The ability to maintain to a suitable standard inclusive of wear and tear and vandalism.

All details in regards to the furniture manufacturer must be supplied to the City. If the cost to the City is considered excessive then the City may not approve the product unless replaced at the end of the maintenance period and prior to handover or replaced by the City at a suitable time after the maintenance agreement.

Where custom made furniture is proposed, the cost of the furniture per item must be supplied and accepted by the City as a suitable product. Suitability of the furniture can be assessed against;

- The replacement cost of the furniture in comparison to similar styles.
- The ability and cost to repair and supply spare parts.
- The ability to maintain to a suitable standard inclusive of wear and tear and vandalism.

All details in regards to the furniture manufacturer must be supplied to the City. If the cost to the City is considered excessive then the City may not approve the product unless replaced at the end of the maintenance period at the cost of the developer prior to handover or replaced by the City at a suitable time after the maintenance agreement.

3.20 POS Lot Boundary Fencing

Where lots abut POS areas and is not separated by a road or right of way, a pedestrian access path should be used for a demarcation point between the lot and the POS area. In this instance where fencing is provided at the subdivision stage, the boundary fencing shall be visually permeable for the length of the common boundary.

The City requires open steel grill construction fencing with or without masonry piers. The maximum height of the fence shall be 1.8 metres and constructed within the private lot. All Lot levels shall be between 250mm and 450mm above the POS ground height to improve surveillance over the POS and security to the adjoining lots. Planting in front of any permeable fencing shall not screen out surveillance potential above 1.2 metres.

Where a lot abut wetlands managed by DEC or the City there will be a requirement for a 1.2 metre high link mesh fence. In areas considered on the edge of urban and considered of a more rural nature the fence requirements will be more rural in appearance by the use of a 1.2 metre ring lock fence.

3.21 Conservation Areas

Conservation areas are identified early in the development application process where there is opportunity to retain 'high value' or significant vegetation and/or fauna habitat within POS. These areas will usually become part of the urban landscape and provision of vegetated links to other vegetation communities that have the potential to provide corridor access may be a planning requirement.

To provide a guideline to identify and conserve, rehabilitate and revegetate conservation areas within POS, the following considerations in alignment with 'liveable neighbourhoods' may help in providing a balance between conservation and active and passive recreation uses in district, neighbourhood and local public open space. The main considerations in identifying conservation areas are below but not limited to:

- Identify and incorporate natural and cultural features and landmarks;
- Identified as a 'high value' habitat or significant vegetation area under the City's Environmental Strategy;
- Existing vegetation including poorly represented vegetation complexes, wetlands, riparian and coastal foreshore;
- Listed as a core habitat under the '*Environmental Protection and Biodiversity Conservation Act 1999*' (EPBC Act);
- Strategic link for wildlife corridor; and
- Linked to a City Policy.

3.22 Recreation Areas

Active recreation within a POS can be described as any area that can sustain a suitable size grassed area for team or group sports either as a formal playing field or where limited in space as an informal playing field dependent on Community needs, infrastructure and the locality.

Where space is limited, recreational areas can also be provided in a more minimalist capacity through alternative recreation facilities like kick about areas, half court basket / netball, adventure playgrounds, walking tracks, etc.

Recreation areas within each type of park need to be assessed against the category of the subdivision ie Category 1, 2 or 3 in the first instance based on the cost to maintain POS within a subdivision and the size of the POS land component.

To provide a guideline in the recreational development possibilities for parks, key identifiers need to be considered in the planning stages in conjunction with Strategic Planning, Community workshops and the City of Busselton's Leisure Services Plan (LSP).

Formalised Playing Fields (large spaces)

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Where larger recreational needs have been identified and progressed into a Development Guide Plan and Landscape Strategy for formal playing areas servicing some or all the principal sports, particular dimensions and facilities need to be considered. To provide a baseline in the requirements of supplying larger POS for recreation, diagrams can be supplied by the North Metropolitan Regional Recreation Advisory Committee (NMRRAC) as a guide or shown in the City's Leisure Services Plan. Dimensions can vary between 5.6 hectares through to 10.7 hectares dependent on the site and needs.

In all formal playing field development it is critical to acknowledge and plan dual use path systems as an alternative to reliance on roads, providing a wider community link and less dependence on vehicle movements, potential traffic congestion and providing for safer and healthier bike riding and walking opportunities.

Further consideration as to the irrigation requirements of larger spaces and the independence and availability of long term water supply by bore for the actual playing field is required. Where water is available, the City requirement would be for the actual playing surface to be watered and the remainder of the POS to be secondary consideration (hydro zone irrigation).

For provision of formalised playing fields, it may be necessary for additional facilities to be supplied to the POS; this may be on a staged basis and part of Strategic planning initiatives inclusive of Developer contributions. Additional facilities may be in the form of but not limited to:

- Formalised car park.
- Sports lighting.
- Club rooms.
- Change rooms.
- Toilets.
- Playgrounds.
- Cricket nets and pitch (sports standard).
- Goal posts both ends (Australian Rules).
- Soccer posts both ends.
- Dual use paths.
- Bore and irrigation.
- Vegetation placement and retention (Shade).
- BBQ's, picnic shelters and seating (Shade) and social amenity.
- Vehicle barriers.
- Drinking fountains.
- Over flow parking and on street parking.
- Full basketball/netball tarmac, posts and rings.
- Etc.

Informal Playing Fields (smaller spaces)

Where large spaces of POS are not available (<5.6 hectares), resources are limited (i.e. irrigation water) and other constraints (i.e. vegetation) limit opportunity to provide formal playing fields, there is still opportunity to provide recreational areas suitable for informal playing fields. Informal areas are more about provision of open space that cannot be configured to suitable sizes but are sites that can supply enough open space for informal 'practice' matches or other open space activities for a team or group.

Informal parks can be of a 'dry' nature and do not require irrigation to provide a standard for informal competition. Informal recreation areas can supply a suite of infrastructure as an interim provider where no other formal playing field opportunities exist within a district or neighbourhood.

Infrastructure may not be required initially to the same level as formal playing fields and will need to be ascertained through growth of development over time and with Community input on future opportunities. Generally informal areas will be a day time activity with minimal energy output for any higher maintenance than Category 3 (no irrigation). Infrastructure will generally be taken from the list above and include but not limited to:

- Playgrounds.
- Cricket pitch (non standard).
- Goal posts one end (Australian Rules).
- Soccer posts (one end).
- Dual use paths.
- Vegetation placement and retention (shade).
- Seating (Shade).
- Vehicle barriers.
- On street parking.
- Half basket ball tarmac posts and rings.

3.23 As-Constructed Information

At the end of the construction phase of the POS works the developer is to provide “as-constructed” information to the City in ‘O-Spec’ format. These details can be found on the Despec website www.despec.com.au.

4 Foreshore Reserves

General

Foreshore reserves are lands that abut a watercourse such as rivers, creeks, lakes or coast and are in addition to the 10% public open space requirement for subdivisions.

Foreshore reserves need to be managed and preserved for a multitude of purposes including but not limited to coastal erosion, recreation and vegetation protection. As part of the development and protection of foreshore reserves the City in conjunction with the WAPC requires the provision of foreshore reserves as a free contribution for inclusion into public reserves.

Part of the WAPC objectives for foreshore reserves is to protect and conserve margins of watercourses, water bodies, wetlands, establish public foreshores along the coast and watercourses adjacent to urban development. It is also to ensure the provision of adequate land to protect, and to provide public access to river, creek, lake and ocean foreshores.

The City has delegated authority to consider foreshore reserve works, limited to those not changing natural vegetation or landform. Any other foreshore reserve development or use related to development is to be referred to Council for approval.

Any coastal development works within 100 metres of the high water mark, 30 metres of a watercourse or 50 metres from an estuary or wetland requires Council approval. The City's Environmental Planning Officer is to be consulted on reserve development matters.

For lots that abut coastal reserves (Geographe Bay) this should be read with Council policies for setbacks, heights and any other conditions on lot development.

4.1 Management Plan

Where a proposed development encroaches or abuts a foreshore reserve there will be a requirement to provide a management plan. A management plan will be necessary if a planning condition set down either by the City, DEC or the WAPC. A foreshore management plan will need to be prepared by a professional with expertise in a broad range of environmental management and sciences and engineering skills.

The type and scope of management plan will be dependent on the scope of development, the sensitivity of the site, current or future public access, rehabilitation requirements or other factors that necessitate management processes in alignment with City, DEC or WAPC current policies or future strategic identified works and development for whole of community benefit.

4.2 Maintenance Agreement

As part of the condition for a management plan if foreshore reserve lands are affected within the development, further works in the form of a maintenance agreement may be included for a set period of time dependent on the scope of the development. Any maintenance agreement undertaken shall be prepared by the

Proponent at their cost. The maintenance agreement will be developed in conjunction with the City and subject to the City's acceptance of the agreement.

Items that may form part of the Maintenance Agreement for Foreshore reserves may include but is not limited to:

- Mowing /edging.
- Weeding / pruning.
- Paving cleaning.
- Mulching touch up.
- Irrigation.
- Dead plant replacement.
- Furniture maintenance.
- Theft / vandalism.
- Storm damage.
- Etc.

4.3 Topsoil Management

Site plans shall be annotated to clearly show areas “to be cleared”. Where approved, all standing timber, scrub and other vegetation, including roots to a depth of 300mm, are to be removed and disposed of in accordance with City requirements. Any trees designated for retention shall be protected from damage to roots and trunks and marked accordingly.

A minimum of 100mm of topsoil from all cleared areas to be earth-worked, shall be stripped and stockpiled for later respreading as directed by the City. Where topsoil profile shows additional soil of suitable retention value then additional soil shall be stockpiled for rehabilitation purposes inclusive of the 100mm.

Rehabilitation of disturbed or previously degraded areas will generally be required as a condition of approval for clearing or reserve development, or as a condition of development approval. The rehabilitation area may be part of or additional to the development area and be part of an offset requirement where limited rehabilitation exists on the existing site.

4.4 Landform Earthworks

Any change to the landform requires City approval. Once approved the site shall be worked to the levels and grades shown on the approved drawings. The amended levels and grades shall be suitable to the designated type of recreation without direct outfall of nutrients, stormwater or other polluting factors entering the water course without pre-treatment processes as a minimum.

Compaction of changed levels where fill is required shall be placed in layers of 300mm in thickness, be watered and rolled to achieve a minimum compaction of the surrounding natural soil.

4.5 Private Property and Reserve Fencing

Where fencing is to be installed along the boundary of the private property, fencing is required to be permeable to ensure minimisation of potential problems relating to

personal security, surveillance, property security, vandalism and poor visual amenity in relation to the reserve and its boundaries (LN V3).

The City is not responsible, under the Dividing Fences Act, for the cost of fencing boundaries of any reserve including public access way and road reserves adjoining private property. This is the responsibility of the adjoining land owner. For lots that abut a foreshore reserve this document should be read in conjunction with the Residential Design Guidelines Policy 2007 for the requirements of fencing.

The type of fencing should be durable in materials and provide a non obtrusive statement through minimisation of material use. The simplest design to adjoining residences is the types mentioned above (bollards/post and rail with chain mesh/post and wire) to provide a parkland feel and provide a level of protection commensurate with the type of constraints required.

Where more robust security is considered necessary then the preferred fencing should still be permeable for surveillance and safety. The preferred type would be open steel 'pool style fencing' with masonry or local stone pillars

Reserve fencing should be used in the protection of reserves wherever impacts may occur that demonstrate remedial action is required.

4.6 Guidelines for Construction of Access to the Coast

Erosion of beaches resulting from wave and wind action is a natural process. In some areas, after periods of erosion, reasonable stability is normally regained through the operation of natural forces. As development occurs and human influence becomes more evident on coastal areas, accelerated erosion of beaches is likely to occur.

Denuding vegetated frontal dunes by foot traffic and/or grazing results in wind transport of sand in an inland direction. This movement decreases the amount of sand in the "sand cycle" between bay, beach and dunes, and can result in accelerated wave erosion due to the lowering in level of the beach and dunes. Structures such as walls and groynes may then be required to protect the shore. Development setbacks are applied to reflect the ability of the coast and coastal protection structures to protect the shoreline.

Natural frontal dunes can be stabilised against wind erosion by vegetative measures or where erosion and resultant damage is extreme by engineering structures such as seawalls. Vegetative stabilisation is the cheaper and more natural type of dune stabilisation. Where this type of stabilisation is used the points of access to the beach are susceptible to wind erosion. Fencing is usually required to control random access.

General Requirements for Beach Access Tracks

Access over a secondary and frontal dune system, to be effective, must comply with these specific requirements, (including river, estuary and wetland foreshores:

- The access must be conveniently placed, so that it will be used by the public.

- Where the access traverses sand, the sand surface must be so treated that it is not susceptible to wind or “human” erosion. This usually entails surfacing of the tracks with compacted limestone, gravel, bitumen, board and chain walkways, mulch, or steps.
- Access tracks should be located OVER existing dunes and not through them. Care should be taken to ensure that the dune height is not reduced to less than 2.5m AHD. Location in this manner will help to prevent the ocean overtopping the dune and the formation of blow-outs along the track, or the excessive accumulation of sand. It will also simplify vegetative stabilisation of the areas alongside the access tracks.
- Provision should be made in the case of gravelled and sealed access tracks to minimise or prevent water erosion. This can be done by preventing excess run-off water on to the tracks, and by shaping the surface of the track to prevent concentration of water and enabling it to shed heavy rainfalls quickly.
- Access tracks should be sited and aligned so that sand blown from the beach does not accumulate in them to any great extent. The tracks should be aligned to be at 45° from the most destructive winds - south west and North West. Width should not be less than 1.5 metres, and up to three (3) metres where emergency vehicle access is required maximum slope should be 15%.
- Tracks should be completely fenced off to prevent damage to the vegetation and to encourage use of the track with suitably worded and prominently placed signs.

This should be read in conjunction with Section 9a Landscape – General Guidelines for details of track specifications.

5 Road Reserves adjoining POS or Foreshore Reserves

Road reserves are generally covered under Section 9(c) Road Reserves and Nature Verges, this applies to either a verge being historically set out as a lawn or a nature verge planted with native plant species. Where a road reserve adjoins a Public Open Space including a Foreshore Reserve, the treatment of the road reserve should be the same as the surrounding landscape values of the adjoining reserves; this will provide continuity in the development of the POS.

Each particular POS may have different objectives dependent on space limitations, adjoining roads, parking, usage etc and cannot be defined as one particular design. A minimum setback of 2 metres will be required adjoining the edge of the road seal or back of kerb. This area is to be left for pedestrian access either constructed as a designated pathway or if not required or existing, then stabilised by the use of compacted gravel, professionally laid paving bricks (City preference red pavers unless part of a designated design area or CBD) or mulch. Any vegetation other than trees within a road reserve shall be kept to a minimum height of 750mm. Trees shall be set out for planting allowing a

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minimum 2.5 metres offset from the road reserve boundary / private property line for the provision of services and utilities.