POS Development Guide

Revision I
December 2017

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Revisions

Revision	Revision Date	Nature of Revision.	Revised by
A	03.07.13	Reference to Water Conservation Plan inserted at 1.6 Pagination inserted	Andy Jarman
B	9/7/13	Street names added to example plans	Andy Jarman
C	16/07/13	Natural Areas and SPZs added. Facility matrix moved to front of document, documentation checklist moved to back of document.	Andy Jarman
D	18/07/13	Policies and Position Statements listed, drafting standards inserted in appendix.	Andy Jarman
E	23/07/13	Macrozamia and Xanthorrhoea salvaging clauses inserted.	Andy Jarman
F	02/10/13	Park Names Signs added, storm water inundation in POS, transplants and advanced stock, soil testing for contamination, documentation schedules expanded, PC certificate pro forma added, drainage infrastructure and kerbing notes added, barbecues only in Regional POS.	Andy Jarman
G	28/11/13	drainage infrastructure and kerbing notes added, barbecues only in Regional POS.	Andy Jarman
H	05/02/14	PC certificate pro forma removed, 3.6.1 amended. Bollards in grass.	Andy Jarman
I	27/06/14	Drainage conditions expanded/detailed. Process flow diagram expanded to include LWMS.	Andy Jarman

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1.0 Introduction

1.1 How to use this document

This guideline document is divided into three main sections:

2.0 Purpose

This section provides an overview of the purpose of the guideline document and provides information and recommendations with regard to seeking professional assistance and the development process.

3.0 Public Open Space Landscape Guidelines

The guidelines provide direction for use in the design and documentation of public open space, which will herein be referred to as 'POS'. It covers the main issues affecting the built outcome of a POS, including:

- Open space hierarchy and classification
- POS Preparatory Site Works
- Hard elements
- Soft elements
- Irrigation
- Maintenance and handover.

4.0 Documentation

This section describes the necessary level of documentation required during the development process, the formats information is required to be presented in, and what details are to be recorded.

1.2 Where this document applies

This document applies to all proposals for the development of POS, where the management of the space will be handed over to the City of Cockburn.

1.3 Substantive Policies and Strategies.

The following lists a number of policies and strategies that POS development is required to comply with. Strategies and Plans are available on line at;

http://www.cockburn.wa.gov.au/Your_Council/Acts_and_Information/Public_Documents/default.asp

The following list identifies the Strategies and Plans that most affect the development of POS.

Liveable Neighbourhoods.

These POS Landscape Guidelines have been developed to work in conjunction with *Liveable Neighbourhoods*, the operational policy adopted by the Western Australian Planning Commission for the design and approval of urban development. The guidelines included herein do not override the

requirements of *Liveable Neighbourhoods* or the WAPC. A read-only copy of *Liveable Neighbourhoods* is available at:

http://www.planning.wa.gov.au/publications/919.asp

Building Code of Australia

The City of Cockburn has adopted the *Building Code of Australia* (BCA) *Volumes One and Two* as the minimum standard for constructed projects. The goal of the BCA is to enable the achievement of nationally consistent, minimum necessary standards of relevant, health, safety, amenity and sustainability objectives efficiently. The guidelines included herein do not override the requirements of the BCA. A copy of the current version can be purchased through the Australian Building Codes Board website at:

https://services.abcb.gov.au/abcbshop/index.aspx

Sustainability Strategy and Action Plan

The City continues to invest in the future of Cockburn through its increasing commitment to sustainability both strategically and operationally. This commitment extends to the construction and maintenance of POS. The City supports the use of sustainable materials and construction practises in development proposals.

http://www.cockburn.wa.gov.au/documents/CouncilServices/Environment/Sustainability/COC_Sustainability_Strategy_2013_17.pdf

http://www.cockburn.wa.gov.au/documents/CouncilServices/Environment/Sustainability/COC_ActionPlan_2013_14.pdf

Water Conservation Plan.

The Water Conservation Plan 2013 – 2018 has been developed to provide strategic direction in water conservation and water quality improvement initiatives within the City's POS. The Water Conservation Plan is intended to ensure that POS development achieves a set of 15 key outcomes. Key outcomes in the Water Conservation Plan that are of central concern to the design and development of POS include;

Ensuring developers

- have a licenced water resource prior to ceding POS to the City
- facilitate the transfer of this licence to the City at the expiration of the maintenance period;
- report Scheme Water and Production Bore consumption annually to the Department of Water during the maintenance period

Ensuring Irrigation system designs

- adopt hydro-zoning principles;
- adopt a uniformity coefficient (CU) of >80% for all reticulated open space;
- allow adaptive irrigation scheduling for all irrigation systems

Community Safety Crime Prevention Strategic Plan (CPTED).

City of Cockburn Closed Circuit Television Strategy.

City of Cockburn Standard Irrigation Specifications.

Various single issue policies.

Cockburn City Council as adopted a series of Policies and Position Statements that apply to the development of POS. Developers of POS can view Council's declared response to specific issues at;

http://www.cockburn.wa.gov.au/Your_Council/Acts_and_Information/Council_Policies/default.asp

Policies and Position Statements pertaining to POS development available through the above hyperlink include the following;

- Bushland Conservation (SPD1)
- Residential Design Guidelines (APD 58)
- Wetland Conservation Policy (SPD5)
- Installation of Playgrounds/Recreational Equipment on Reserves (AEW4)
- Establishment of Community Gardens (AEW 7)
- Maintenance of Verges/Public Open Space Following Residential Subdivision (SEW1)
- Street and Public Area Lighting (SEW2)
- Establishment of Footpaths (PSEW5)
- Subdivision Construction Standards (PSEW11)
- Standard Specification and Cost of Crossovers (PSEW12)
- Removal and Pruning of Trees (PSEW15)
- Unkempt Verge Mowing (PSEW16)
- Outdoor Sport Lighting on Recreation Reserves (PSEW17)
- Shade to Playgrounds on Recreation Reserves (PSEW19)

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2.0 Purpose

2.1 Objective

The aim of this document is to provide guidance in the development of POS within the City of Cockburn. The guidelines have been developed to provide benefits for all parties involved in the process and its outcomes: developers, the community and the City of Cockburn.

2.2 Professional Assistance

Developers are encouraged to engage a qualified landscape architect or similar professional consultant to undertake the design and preparation of landscape drawings and specifications for submission to the City of Cockburn.

A consultant with experience in creating POS can often be useful in developing designs that comply with landscape guidelines, as well as in providing advice about the approvals process.

2.3 Development Process

The following flow chart provides an overview of the City of Cockburn's typical development process for POS projects.

2.3.1 STRUCTURE PLAN STAGE – PUBLIC DOMAIN DESIGN.

Consideration of the design of the City's Streets and Public Open Space begins at Structure Plan Stage.

The Public Domain Design Guide illustrates the successful integration of the needs of the various specialist disciplines contributing to a structure plan. The Public Domain Design Guide will provide model design solutions in plan view, with cross sections and supporting text.

The Public Domain Guide will consider the broad range of activities and demands placed upon the streets and Public Open Spaces within the Structure Plan are including issues such as:

- Transport – bus routes, road and traffic characteristics;
- Land use zoning – activity types within the streets and around the parks;
- Residential Density coding - future housing set-backs, lot widths, population characteristics;
- Storm Water Management - size, function and positioning of swales, maximum ground water levels within POS, kerb types, embayment positioning, verge finishes and so on.
- Ecological issues – important conservation issues, bushfire management constraints,
- Social/community issues – heritage artefacts, historical traditions and patterns, social resource centres such as schools, community centres and so on.

The Public Domain Guide model designs can provide guidance to subdivision developments occurring within the Structure Plan area. This will ensure continuity in the development of POS shared between subdivisions, and will ensure the streetscape is functions in a consistent manner between adjacent subdivisions.

The Public Domain Design Guide will be submitted at structure plan stage and will be referenced by the **Local Water Management Strategy** to satisfy the requirements of the *Better Urban Water Management* handbook.

2.3.2 SUBDIVISION STAGE.

The subdivision submission shall include designs describing the development of the Public Domain Guide concepts modified to suit the particular area being subdivided. Public Domain Guide concepts will require modification to accommodate detailed site specifics such as:

- lot levels;
- carriageway geometry;
- utility alignment and structures;

Subdivision drawings will include sufficient detail to permit the City's staff to appreciate the final detailed design of the POS and streets.

2.3.3 DOCUMENTATION STAGE.

As the streets and POS are ultimately to be adopted by the City's maintenance and management teams, it is important that the quality and detailing of the infrastructure to be adopted are to the City's satisfaction.

Parks Services require an opportunity to vet and approve the proposed materials, construction and finishes of the various elements being proposed in the City's POS, and the detailing of pedestrian facilities (tree pits, footpath layouts and planting/irrigation designs) within the City's streets.

2.3.4 CONSTRUCTION.

During construction of subdivision works it is important that Parks Services remain in contact with the consultancy team overseeing the development of the POS and the aspects of the street identified in the documentation stage above.

The City's Senior Development Engineer takes overall coordinating role during the subdivision construction phase. Parks Services staff will identify at documentation stage the aspects of the development that its specialist staff require to be involved with during the construction phase. Aspects of development such as will be of concern to Parks Services staff during the construction phase:

- Earthworks and drainage basin formation in POS sites;
- Planting (trees, shrubs and lawn);

- Protection and renovation of site features (trees, artefacts such as stone walling, protected bushland areas and so on);
- Pedestrian street furniture (tree pit construction, benches, hand rails, drinking fountains and shelters);
- Pedestrian paving, and retaining walls in public areas.

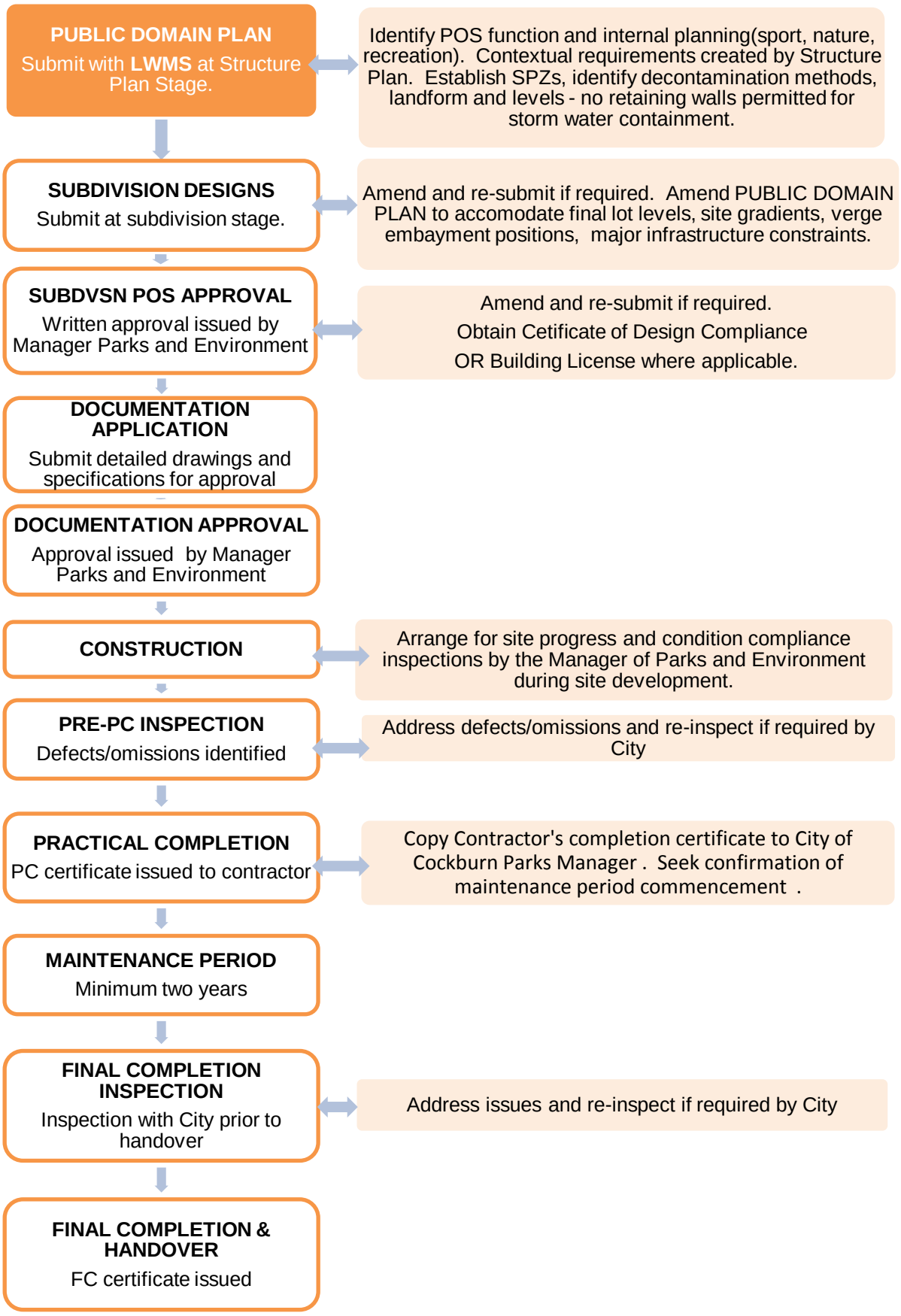
As the construction phase draws to an end Parks Services will require the following meetings:

Pre-practical completion inspection - identifies remaining issues outstanding

Final practical completion - confirmation all issues outstanding have been resolved, confirmation of the commencement of the Maintenance Period.

2.3.5 MAINTENANCE PERIOD

2.3.6 FINAL COMPLETION AND HANDOVER.



3.0 Public Open Space Development Guidelines

3.1 Open Space Hierarchy and Classification

POS can be broadly classified into a hierarchy based on size and the area it is intended to service. These classifications are consistent with *Liveable Neighbourhoods* which is the guiding planning policy for the City of Cockburn. The POS categories are:

- **Local**
- **Neighbourhood**
- **District.**

A more detailed breakdown of the POS hierarchy is provided in the table below. These classifications provide guidance in selecting the appropriate level of embellishment for your POS, in reference with the Section **3.2 Public Open Space Embellishment Matrix**.

Hierarchy Level	Size Range	Nominal Budget	Service Area
Local	< 0.3 Ha	< $0.5M	Services the residents within 150 to 300m safe walking distance.
Neighbourhood	0.3 – 2.5 Ha	$0.5M - $1.5M	Services 600 – 800 dwellings, within a maximum 400m safe walking distance.
District	2.5 – 7 Ha	> $1.5M	Services three neighbourhoods, within 600m – 1km safe walking distance.

Table 1: Public Open Space Hierarchy and Classification

3.2 POS Facility Matrix

The following matrix outlines the **indicative** type of facility to be included in the design for each POS type. If assistance is required in determining where a POS fits within the hierarchy, or if developers believe it requires a level of facility higher than allowed for in the matrix, please contact the City of Cockburn Parks and Environment Business Unit.

POS Type			Appropriate facility type																	
Hierarchy Level	Size Range	Nominal Budget	Infiltration basin	Native planting (trees/shrubs)	Exotic planting (trees/shrubs)	Turf	Playground / exercise equipment	Shade sail	Shelter structure	Boardwalk/lookout	Site furniture (seats/tables)	Fencing	Bollards	Lighting	Barbeque / litter bin	Drinking fountain	Paving	Temp. Irrigation - scheme	Irrigation - bore	Artwork / interpretation
Local	< 0.3 Ha	< $0.5M	■	■	■	■	■				■	■	■				■	■		
Neighbourhood	0.3 – 2.5 Ha	$0.5M - $1.5M	■	■	■	■	■	■	■		■	■	■	■	■	■	■		■	■
District	2.5 – 7 Ha	> $1.5M	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■

Table 2: POS Development Matrix

3.3 POS Preparatory Site Works

Scope

'Site Protection Zones' (SPZs) refers to areas of a POS or individual features such as artefacts or trees that may be of value to the future role of the POS site. SPZs shall be identified on all site work drawings, from demolition and site strip down to final finishes and set out drawings to ensure that the items within the SPZ are protected and retained throughout the development process. Refer to the appendix to this guide for further direction on how a SPZ is established and maintained.

'Earthworks' refers to the bulk movement of earth within a POS, including import and removal of fill from the site.

'Drainage' refers to surface and sub-surface water movement with a POS, including but not limited to swales, compensating basins and engineered drainage solutions.

'Natural Areas' refer to areas of public open space which provide value for their ecological or educational role. Generally these include areas of remnant bushland, coastal dunes and wetland with at least a ground cover of indigenous vegetation.

Standards and Guidelines

All earthworks and drainage works are to comply with the City of Cockburn's *Guidelines and Standards for the Design, Construction and Handover of Subdivision within the Municipality*. A copy of the document is available at:

http://www.cockburn.wa.gov.au/documents/CouncilServices/EngineeringServices/guidelines/Subdivision_Guidelines_-_December_2010.pdf

Natural Areas occurring outside of the City's Conservation Reserves shall be developed such their ecological and educational values are enhanced. The recreational role of natural areas shall be tempered by the ecological and educational imperatives, access and management priorities for these areas may require that access is carefully managed and may even be denied in limited instances.

Guidance on the appropriate design and management response to Natural Areas within POS is given in the City of Cockburn's Natural Area Management Strategy available at:

http://www.cockburn.wa.gov.au/Your_Council/Acts_and_Information/Public_Documents/3049-natural_area_management_strategy_2012-20_version_4.3.pdf

The Natural Area Management Strategy cites the following factors as the most threatening to the continued health and viability of natural areas within the City's POS;

- Weeds
- Feral Animals
- Unauthorised access by off road vehicles
- Illegal Rubbish Dumping
- Fire Management
- Disease Infection
- Stormwater Drainage
- Climate Change.

Development of POS that contains Natural Areas shall ensure that the aims and requirements of the City's Natural Area Management Strategy are incorporated into the both the design and the future performance of the Natural Area as a community resource. Consideration of the role of the Natural Area's following features;

- Shape
- Perimeter to area ration
- Connectivity
- Accessibility
- Visibility
- Relationship with local organisations/communities and
- Management Category

will assist in determining the most appropriate response to developments in and around the Natural Area. These factors and appropriate responses to them are discussed in detail in the City's Natural Area Management Strategy.

3.4 Hard Elements

3.4.1 STORM WATER DRAINAGE INFRASTRUCTURE.

Containment of storm water on POS sites (as described in the LWMS) shall be achieved **without the use of retaining walls**. Retaining walls on POS designs shall only be introduced to provide recreational enhancement – not for the accommodation of utilities.

POS that is required to contain cross falls that limit or constrain the use of the POS by residents are considered to be inadequately considered in terms of the their context and positioning within the landscape.

Stormwater drainage infrastructure shall be located and designed such that drainage structures are as unobtrusive as practically possible.

Headwalls and bubble-ups shall discharge into areas planted with dense low shrub cover with stone pitching or in situ concrete aprons and spillways shall be provided at the point of outfall to prevent erosion during storm events.

Bubble-ups are not acceptable in turf areas where they create an unwanted focal point of attention for vandals and a trip hazard/obstacle for park users.

1:1 year storm event drainage must discharge into a shrub planted area that is designed to be inaccessible to the public. This is intended to reduce the incidence of the public coming into contact with pollutants emitted from stormwater drainage systems.

Roads describing the perimeter to POS will use barrier kerbs, stormwater will be fed into gulleys located in the street's gutters which in turn will feed stormwater water into bubble ups/headwall pipe outfalls as appropriate.

Gross pollutant traps shall be located so that they are accessible from the road reserve without need for maintenance vehicles to enter the park.

Drainage swales shall be shaped such that they are integrated into the park visually, and such that they enhance the parks use as a recreational resource. The geometry and extent of swales shall be designed such that existing vegetation removal is minimised.

Long narrow 1 year storm event swales are preferred. These are more easily maintained and less obtrusive than geometric swales with a low perimeter to surface area ratio such as squares, circles and quadrants. Geometric/wide swales tend to remind visitors of their utilitarian role by virtue of their prominence within the POS.

The use of retaining walls to achieve adequate drainage volume is considered to be an unacceptable outcome. Temporary flooding attracts the attention of local children, five year events can produce

water bodies up to 500mm deep for a number of days at a time. This has been considered a hazard by the community, and saps the City's staffing resources attending to other concerns.

Swales designed to contain greater than 1 year storm events but less than 5 year events may be finished with turf, provided that *there is greater than 1m separation between the maximum ground water level and the proposed ground level*.

Electrical infrastructure such as irrigation solenoid switches, lighting and other powered elements shall not be permitted within swales deigned for less than 5 year storm events.

Sprinkler heads, reticulation and play equipment is permitted within 5year event swales however, consideration should be given to providing perimeter walling to soft fall areas to reduce the frequency of play areas being flooded.

3.4.2 PAVING

Definition

'Paving' refers to all publicly-trafficable hard paved surfaces within a POS including but not limited to:

- footpaths and dual-use paths
- in-situ and unit paving areas
- compacted and stabilised granular materials (road base, gravel etc.).

Accessibility & Safety

Paving is to be designed and installed to comply with the Australian Standard™ 'Design for access and mobility' (AS1428.1/2/3/4 - 2009). Exceptions will be made for paths running along the back of kerb where the road gradient is steeper than 1:14.

Where required, tactile paving shall be installed in accordance with Australian Standard™ 'Design for access and mobility – Tactile indicators' (1428.4.1:2009 + Amendment 1-2010).

All paved surfaces are to be graded to drain to turf and planting areas.

Location

Paths are generally to be located to accommodate natural pedestrian desired lines of travel. Paths around the perimeter of a POS are to abut the back of kerb.

Standards & Dimensions

All concrete, asphalt and brick paving within a POS shall be designed to be trafficable by maintenance vehicles. Refer to the *City of Cockburn's Vehicle Crossover – Specification and Forms* for the required thickness, strength and finish standards. A copy of the document is available at:

http://www.cockburn.wa.gov.au/documents/CouncilServices/EngineeringServices/CrossoverSpecs2012b.pdf

Paving areas and pedestrian paths shall be a minimum width of 1500mm. Designated dual-use (pedestrian and cyclist) paths shall be a minimum width of 2000mm.

Where paths intersect, corners shall have a consistent radius of minimum 500mm.

Pedestrian-only in situ concrete paving shall be a minimum of 100mm thick. In situ concrete paving accessible by vehicles shall be reinforced and a minimum of 150mm thick.

Materials & Finishes

The following materials are acceptable for use as paved surfaces:

- in situ concrete
- unit paving (clay, concrete, stone etc.) with edge restraint haunching
- compacted and stabilised granular materials (road base, gravel, limestone etc.).
- red asphalt with concrete edging
- specialist paving surfaces (basketball court playing surface etc.).

A wide range of colours and finishes are available within the approved paving material range. Colours and finishes that complement the characteristics of the site are supported, as are those which will not deteriorate over time, e.g. UV stable oxides.

Materials can be used to define the hierarchy of access within a POS. For example, hard paved surfaces are more appropriate for use in high-traffic pedestrian areas such as main thoroughfares, around furniture and major social areas. Granular surfaces such as compacted gravel are more suited to applications in bushland areas and secondary path networks.

Loose granular materials (e.g. loose gravel etc.) are not supported as a paving material.

Maintenance

Paving materials are to be durable and hard-wearing, with low on-going maintenance requirements.

3.4.3 EDGING

Definition

'Edging' refers to flush constructed edges used to bound a hard or soft ground surface.

Accessibility & Safety

Edging abutting pedestrian access ways shall be flush with the adjacent surface so as not to create a trip hazard.

Location

Edging shall be used to separate adjacent areas of turf, paving and planting.

Materials

The following materials are acceptable for use as edging:

- In situ concrete
  - extruded or formed
  - minimum 150 x 150mm profile
- Steel edging
  - minimum 150mm depth
  - Hot Dip Galvanised
- Solid masonry blocks
  - concrete or stone
  - nominal 240 x 350 x 500mm block size
  - smaller block sizes may be considered if laid on a footing.

Maintenance

Edging is to finish flush with turf areas to allow for ease of maintenance. A 50mm freeboard is to be left between edging and the top of mulched planting beds to prevent overspill of mulch and allow for top-up.

3.4.4 PLAY SPACES

Definition

'Play space' refers to areas within a landscape of which the primary function is to provide play value for children.

Accessibility & Safety

Play spaces are to be designed and installed with reference to the Australian Standard™ 'Playground equipment' (AS4685.1/2/3/4/5/6 - 2004).

Equal opportunity for access should be considered in the design and location of play spaces.

Location

Play spaces are to be located a minimum of 8m away from roads and water bodies. Where practicable, play spaces should be situated to provide unobstructed surveillance from nearby roads, pedestrian paths and visitor facilities (barbeques, picnic areas and so on.).

Play spaces aimed at different age groups, for example toddlers and early teens, should be separated and located away from each other to prevent conflicts between the user groups.

Equipment

Both custom and off-the-shelf play equipment may be included in a play space.

Shade

Shade is an important issue in the creation of a play space. Where large existing trees provide shade on a site, consideration should be given to locating the play space nearby to utilise the shade (subject to the suitability of the tree and site conditions).

Where existing shade is not available, solid and tensile shade structures may also be considered in accordance with the City's shade policy (PSEW19) available at:

http://www.cockburn.wa.gov.au/documents/CouncilDoc/Policies/Position_Statements/EngineeringWorks_Serv/psew19.pdf

Soft Fall

A certified soft fall surface shall be used within all play equipment fall zones. Soft fall materials may include:

- washed play sand
- wood chips
- wet-pour rubber soft fall.

All soft fall surfaces shall comply with Australian Standard™ 'Playground equipment' (AS4685.1/2/3/4/5/6 - 2004).

Maintenance

All play equipment shall be regularly maintained throughout the establishment and maintenance period and checked regularly for compliance with Australian Standards. Certification is to be provided to the City of Cockburn at the conclusion of the maintenance period as part of handover.

3.4.5 STRUCTURES

Definition

'Structures' refers to all vertical built forms within a POS including but not limited to:

- shelters
- tensile shade sails
- retaining walls
- boardwalks
- signage.

Certification & Permits

All structures to be constructed shall obtain a Certificate of Design Compliance by an independent registered building surveyor prior to lodging a building permit application with the City of Cockburn's Building Services Department.

A separate Building Licence for each structure within a POS will need to be obtained from the City, prior to construction starting.

Signage for advertising purposes shall be of a temporary nature and subject to planning approval.

Materials

Materials proposed for use in structures and signage shall be durable and hard-wearing, suitable for exposure to outdoor conditions with low on-going maintenance costs.

3.4.6 FENCING & BOLLARDS

Accessibility & Safety

Fences and gates are to be designed and installed to comply with the Australian Standard™ 'Design for access and mobility' (AS1428.1/2/3/4 - 2009).

Where fences are installed surrounding a playground, child-proof latches are to be used on pedestrian access gates.

Location

Bollards are only to be installed in turf adjacent to flush kerbing or where undesired vehicle access is likely to occur, e.g. where POS areas are developed with little passive surveillance from surrounding residents.

Bollards and fencing are to be located on the property boundary at 1.5m centre spacing.

Materials

All fencing and bollards shall be constructed from durable and hard-wearing materials suitable for exposure to outdoor conditions.

The use of CCA treated pine will not be accepted by the City of Cockburn.

Maintenance

Where bollards or fencing prohibit vehicular access into or within a POS, provide a gate or removable bollards to allow access by maintenance vehicles.

3.4.7 LIGHTING

Definition

'Lighting' refers to public lighting within a POS including but not limited to:

- pole-top lights
- feature lighting
- in-ground up-lights
- sports lighting.

The use of bollard lighting is not supported. Street lighting is not included in the scope of this document.

Accessibility & Safety

Lighting is to be designed and installed in accordance with Australian Standard™ ' Lighting for roads and public spaces - Pedestrian area (Category P) lighting - Performance and design requirements' (AS/NZS 1158.3.1 – 2005) where applicable.

Location

Lighting is only to be installed in areas of anticipated high foot traffic and activity, e.g. main pedestrian routes, barbeque areas, sports courts etc. Do not locate lights within 10m of residential properties.

Lighting adjacent to bushland is to be located and specified to minimise light spill into habitat areas.

A 'PE' cell and timer control system is to be installed for all lighting. All control gear is to be easily accessible within the POS for access by maintenance staff and the City of Cockburn.

Dimensions & Specifications

Only fittings specifically designed for outdoor conditions shall be used.

Pole-top feature light fittings shall be a minimum height of 5m above the ground. The use of fittings with hidden / inaccessible light sources is preferred.

In-ground up-lighting is to be installed flush with the surrounding surface. All up-lights shall be fitted with vandal-resistant glass. The use of 'spike-type' mounting for up-lights is not supported.

The design of sports lighting is to accordance with the City's position statement on *Outdoor Sports Lighting on Recreation Reserves,* available at:

http://www.cockburn.wa.gov.au/documents/CouncilDoc/Policies/Position_Statements/EngineeringWorks_Serv/psew17.pdf

The use of lighting powered by renewable energy sources (solar and wind) is supported by the City.

Maintenance

Lighting shall be regularly maintained throughout the establishment and maintenance period and checked regularly for compliance with Australian Standards.

3.4.8 FURNITURE

Definition

'Furniture' refers to all outdoor furniture and fixtures included within a POS intended for public use, including but not limited to:

- litter bins

- seats, benches and tables
- drinking fountains
- bicycle racks
- tree grates and
- barbecues.

Accessibility

Equal access should be considered in the selection of furniture. Preference will be given to furniture that is accessible for wheelchair-bound visitors, particularly tables and drinking fountains.

Location

Furniture is to be located where appropriate for its function. Design for ease access to and around furniture items.

Barbecues are an expensive maintenance burden that the City does not support except for regional parklands where residents will find it inconvenient to bring their own barbecue to the park with them.

Materials

All furniture shall be constructed from durable and hard-wearing materials suitable for exposure to outdoor conditions. Preference will be given for furniture designs that employ more sustainable materials, are robust and are more easily repaired.

Materials employing high levels of embodied energy (Aluminium, glass and Stainless Steel) will only be acceptable if they are low maintenance and robust items.

The City employs carpenters and sign makers who are capable of repairing and replacing simple modular units, preference will be given to items that they are able to repair, preferably *in situ.*

3.4.9 PARK NAME SIGNS

Definition

The subdivision developer shall furnish and install a park name sign for each new POS site developed by the subdivision process.

The State Government's Geographic Names Committee (GNC) approves and records place names. At the time of subdivision the names of the streets within new developments are chosen and submitted to the GNC for adoption. At this stage it is required that the subdivision developer consider and determine the most appropriate name for the City's new POS. The City's Position Statement PSPD20 Naming of Parks and reserves can be found on the City's website at

http://www.cockburn.wa.gov.au/documents/CouncilDoc/Policies/Position_Statements/PlanningDevelop_Serv/pspd20.pdf

The City has resolved in its Aboriginal Reconciliation Action Plan to list an Aboriginal/English dictionary the reverse side of its parks name sign. A copy of the RAP can be found on the City's website at

http://www.cockburn.wa.gov.au/Community_Services/Aboriginal_Services/

The City of Cockburn's Landscape Architect is responsible for compiling and supplying the contents of the Aboriginal/English dictionary for each park name sign.

Location.

All POS name signs shall be located on and in line with the lot boundary truncation of the most prominent corner of the new POS side.

Materials

The City has adopted a standard design for its park name signs. A copy of the design drwing is provided in the appendix to these guidelines.

3.4.9 INTEGRATION OF DRAINAGE INFRASTRUCTURE.

Definition.

The State Governments Liveable Neighbourhoods development policy document encourages the disposal of stormwater from the subdivisions road reserves in the POS sites within the subdivision. A consequence of the move away from discrete inaccessible sumps towards open accessible swales within the City's parks has meant it is now important to consider the integration of the drainage infrastructure (pipework headwalls, bubble ups and swales) within the functioning of the City's new parks.

Location.

All bubble ups shall be located within planted/shrub planted areas, 1:1 storm events shall not inundate lawn areas. Regular inundation of lawns makes them inaccessible for maintenance vehicles and degrades or destroys the lawn through repeated inundation.

All lawns shall be established only on areas above the 5year storm event contour, UNLESS the Maximum Ground Water Level is more than 1m below the bubble up spill-over level.

Where the maximum groundwater level is more than 1m below the finished ground level lawn areas are permitted within the 5year contour BUT NOT within the 1 year storm event contour.

POS design drawings should indicate the following;

- The 5 year storm event contour.
- The Maximum Groundwater contours within the 5year storm event contour, to demonstrate 1m separation between all lawns and the ground water table beneath them.

Materials

Bubble ups shall be furnished with a perimeter apron to facilitate cleaning and removal of silt. Contingencies shall be made to prevent mulch being drawn down into the bubble up chamber and blocking it after the swale is inundated.

3.5 Soft Elements

3.5.1 EXISTING VEGETATION

Definition

'Existing vegetation' refers to all native and exotic plants and trees present on a site prior to development. Weed species are not considered to be existing vegetation.

'Vegetation Salvage' refers to the relocation of live vegetation or the relocation of dead trees for sculptural/habitat purposes.

Criteria for Retention

Preference should be given to the retention tree and vegetation species native to the area. Retention of exotic trees and vegetation is also supported where the specimens can be shown to have a high aesthetic, cultural or habitat value.

The City encourages the salvaging and relocating of Grass Trees (*Xanthorrhoea preissii*) and Zamia palms (*Macrozamia reidlei*) from bushland cleared during the site development process. Successful relocation of these species requires liberal watering during the first two summers after transplanting.

Location

All trees and areas of vegetation to be retained are to be clearly marked on the drawings (refer to 3.2 POS preparatory site works above).

Protection

Existing vegetation nominated for retention should be fenced off prior to and throughout the construction period. Temporary fencing for this purpose is to be shown on all layout plans (refer to appendix for Site Protection Zone checklist).

Salvaging.

Earthworks and site strip documentation/drawings must describe the relocation method and identify the individual trees/palms to be relocated. It is preferable for trees/palms to be relocated to their new permanent location which shall be described as a SPZ for the duration of the subdivision process. Alternatively salvaged material may be maintained in a Nursery Industry Association (NIA) registered nursery (dieback free) for planting out into areas after formation levels have been established on site.

3.5.2 PROPOSED PLANTING

Species

All proposed tree and plant species are to be approved by the City of Cockburn. The use of local native species that complement the character of the site is preferred, though the use of exotic species with low on-going maintenance and water requirements is permitted. Species that have been identified as weeds will not be approved.

A list of site-appropriate tree species is available in the City of Cockburn's 'Grow Local' brochures, available on the City's website at:

http://www.cockburn.wa.gov.au/Council_Services/Environment/Documents_Publications_Plans_and_Brochures/default.asp

To determine which brochure best applies to the site, refer to Figure 1: City of Cockburn Planting Zones and locate the area in which the POS is situated, and then select from:

- Grow Local Plants 'Coastal'
- Grow Local Plants 'Western Coastal Plain'
- Grow Local Plants 'Central Coastal Plain'.

A complete schedule detailing the species, planting density and stock size of the proposed mass planting shall be included on the landscape planting plan. Refer to Section 4.4 for example drawings.

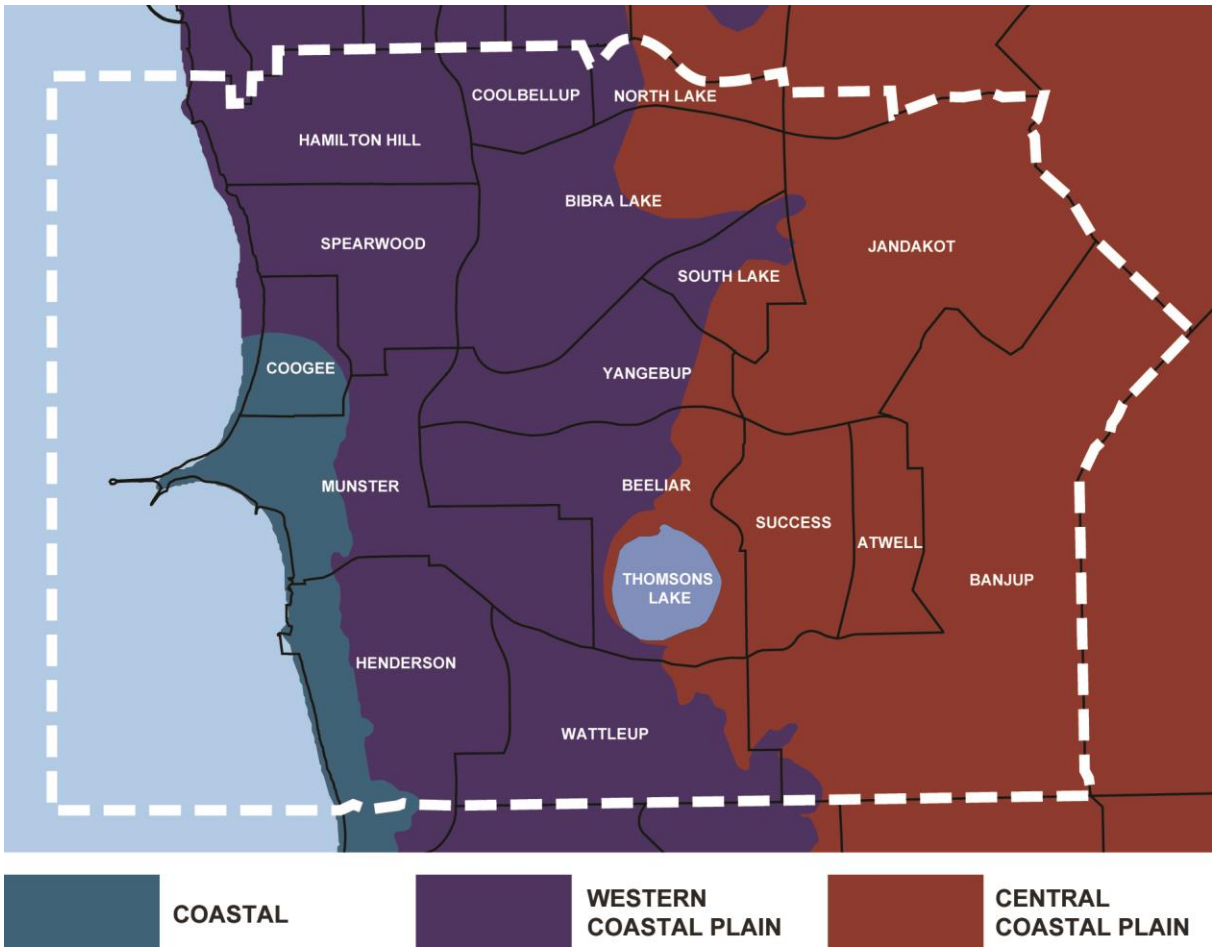


Figure 1: City of Cockburn Planting Zones

Source: Grow Local Plants Poster – produced by Government of Western Australia & Northern Metro Catchment Group Inc.

3.5.3 TREES

Location

Trees should be located so as not to obstruct sightlines for motorist and pedestrians. They shall be planted a minimum of 1m from any hard paved surfaces or edges and 3m from residential fences. Locating trees within mass planting areas or dedicated tree wells is encouraged. Trees located in turf are to have a 1m diameter ring of mulch at the base to assist maintenance.

Crime Prevention Through Environmental Design (CPTED) principals shall be considered in the design. Clean-trunked or under-pruned tree species should utilized in conjunction with pedestrian access ways to allow clear lines of sight, and located away from street and park lighting for safety.

All proposed trees shall be clearly marked on the drawings.

Due to the lack of a nationally agreed standard for Australian nursery stock, the City will judge the quality of tree planting stock against the Natspec Guide to Assessing Tree Quality by Ross Clark.

Stock Size

Trees planted as individual planting are to be a minimum pot size of 45L. Where tree species are included as part of a mass planting mix, smaller stock sizes are permissible.

Mulch

All trees shall have 75mm depth organic mulch in a 1m diameter mound dished to the base of the tree trunk. Mulch specified shall be fully composted and certified *Phytophthora*-free.

Stakes and Ties

All trees are to be staked and tied throughout the establishment period. The use of hessian ties is not supported.

3.5.4 MASS PLANTING

Definition

'Mass planting' refers to all shrub, groundcover and sedge species planted in beds. Stock size generally ranges from tubestock through to 300mm pots.

Location

Mass planting should be located so as not to obstruct sightlines for motorist and pedestrians. In particular, plant species chosen for installation within the road reserve shall have a maximum mature height of 600mm so as not to obstruct sightlines.

Where mass planting is located adjacent a road, a 1000mm width strip is to be left unplanted at the back of kerb to provide safe maintenance access to the verge.

Crime Prevention Through Environmental Design (CPTED) principals shall be considered in the design. Mass planting within two meters of pedestrian paths and access ways should be limited to shrubs and groundcovers growing to no more than 600mm high to allow clear lines of sight.

All areas of mass planting shall be clearly marked on the drawings.

Dimensions

Separate areas of mass planting should cover a minimum area of five square metres, with a width of at least 800mm. Gradients in unstabilised mass planting areas shall be 1:3 or flatter. If it is not possible to achieve these gradients, soil stabilisation measures shall be installed.

Mulch & Soil additives

All mass planting areas shall have 75mm depth organic mulch. Mulch and soil additives specified shall be fully composted and certified Dieback (*Phytophthora cinnamomi)* free.

3.5.5 TURF

Location

Areas of turf are to be located to provide maximum public recreation value. The use of turf for aesthetic purposes only (e.g. small areas adjacent major roads) is not supported.

Turf areas shall be bound by kerbing, edging and/or hard paved surfaces (excluding compacted granular materials) flush with the turf surface. The use of soft or 'spade' edges between turf and mass planting areas is not supported.

All areas of turf shall be clearly marked on the drawings.

Dimensions

Separate areas of turf should cover a minimum area of 30 square metres, with a width of at least 3m. Gradients in turf areas shall be 1:6 or flatter.

Turf Species

The following turf species are supported:

- *Pennisetum clandestimium* (Kikuyu).

The use of roll-on turf is preferred. The minimum roll width is to be 300mm.

The use of turf stolons is also acceptable; however, **Practical Completion will not be accepted by the City until a uniform layer of 80% coverage has been achieved across stolonised areas with a minimum establishment period of 16 weeks**. It is recommended that pedestrian traffic is excluded from the stolonised area throughout the establishment period. Temporary fencing for this purpose should be shown in the POS development documentation.

Bollards

The use of bollards is not encouraged to prevent unauthorised vehicular access. Bollard maintenance (whipper-snippering, straightening, replacement and landfill charges) is an onerous burden on the City's maintenance budget. Barrier kerbing is the preferred method for deterring vehicular access onto POS grass areas.

Limited use of bollards may be appropriate at restricted access points into POS sites. Consideration of access for maintenance vehicles should be made. Hinged lockable bollards are preferable to socket type removable bollards. Sockets can fill with sand.

Where site boundaries are secured with bollards, the bollards must be located along the lot boundary. Avenue planting integrated with bollards may be used to reduce the number of bollards.

Irrigation and Maintenance

All turf areas are to be irrigated. Turf areas shall be easily accessible by maintenance staff and vehicles. The design of turf areas shall accommodate access for a ride-on mower, including connectivity between turf areas within the POS for maintenance operations. Allow for the unobstructed width of a ride-on mower when locating furniture and trees in turf areas.

Design

Irrigation designs shall be prepared in accordance with the City of Cockburn 'Generic Specifications for Irrigation' and submitted for approval prior to construction. A copy of the standards is available on the City's website at;

http://www.cockburn.wa.gov.au/Council_Services/Engineering_Services/Subdivision_Engineering_Guidelines/default.asp

Proposals for the installation of new bores will not be supported for 'Local' level POS if an existing bore on a neighbouring POS can be used to supply the new Local POS. The City's Generic Irrigation Specifications include for a small 'domestic' bore, these shall be used only where alternative provision of bore water is not possible in Local POS sites.

'As Constructed' Drawings

Irrigation 'as constructed' drawings shall be provided to the City of Cockburn at at handover.

3.5.6 TRANSPLANTS AND ADVANCED SIZED NURSERY GROWN TREES.

The large investment required in the use of transplanted and large nursery grown stock requires the City to take additional safeguards to ensure it adopts material that will not require exceptionally large maintenance or replacement costs.

Proposals to use transplanted and large nursery grown stock shall provide the following information;

- A method statement describing the transplant operations involved.
- The maximum diameter of roots that may be pruned prior to transplanting trees.
- The terms and conditions of guarantees provided by the supplier.
- The cost of the material including installation.
- The suppliers after care requirements during the two year maintenance period

3.6 Maintenance & Handover

3.6.1 MAINTENANCE & PRACTICAL COMPLETION

Development Approval

As part of Development Approval, a detailed schedule of maintenance tasks, resources and frequency is to be submitted and approved for the proposed landscape. The schedule shall meet the City of Cockburn's service level standard of no more than $20,000 / hectare / annum for landscaped streets and POS. A copy of the standard schedule is provided in section **5.0 Appendices**.

Practical Completion

A Pre-Practical Completion inspection will be held towards the end of the construction period to determine if the POS is fit for public use. The Developer shall arrange for the pre-practical completion site inspection of the Works with the Manager of Parks Services.

Evidence that the builder contracted for the development of the Park has executed the Works contained in his contract with the Developer shall be provided by the Developer in the form of a Certificate of Practical Completion signed by the Landscape Architect or other Superintendent identified in the POS main building contract.

Certificates of Practical Completion shall be in a form equivalent to those provided in the Standards Australia suite of Building Forms of Contract.

Any defects or omissions recorded at the Pre-PC inspection by the City must be rectified before the Maintenance Period can commence.

Irrespective of the date of Practical Completion cited in the PC certificate, the two year Maintenance Period for the Works shall not be deemed to have commenced until written confirmation to this effect is issued by the City of Cockburn's Manager of Parks Services.

Maintenance Period

POS shall be maintained at the developer's cost for a minimum period of two years following Practical Completion to ensure plant establishment, monitoring and adjustment for specific site conditions.

All trees and shrubs shall be appropriately cared for during the maintenance period to ensure optimum growth and survival. Any plant losses shall be replanted with the same species upon removal of the dead plant. This should occur during the course of maintenance works and not delayed until the lead up to handover. Should a particular species be subject to continual losses then consultation shall be made with the City for an approved alternative species.

The City may request soil testing to confirm that repeated failures of planted areas is not due to phytotoxins present on the site.

3.6.2 FINAL COMPLETION & HANDOVER

Final Completion

A Final Completion inspection shall be held at the end of the maintenance period to determine if the condition of the POS is acceptable to be handed over to the City of Cockburn.

Upon handover at the completion of the maintenance period a 100% survival rate for all vegetation shall be achieved. The City may request a plant count be undertaken with the type and number of species recorded and submitted to the City for review as part of handover documentation.

Any item of hardscape that fails to meet the desired outcome or expectation as detailed on the plans submitted may be requested by the City to be modified, replaced or removed at the developer's expense.

The developer will be responsible for transferring all Groundwater Licences approved by Department of Water for the subdivision, to the City the Cockburn following the maintenance period. Additionally, developers must transfer ownership of all connections to electricity, gas and water within the POS to the City at handover.

The following documents must also be provided to the City at handover:

- monthly metering data for water and bore connections, collected during the maintenance period
- reports of regular playground inspections carried our during the maintenance period, including an inspection carried out prior to Final Completion
- full set of current 'as constructed' drawings, specifications and operation manuals.

3.6.3 AS CONSTRUCTED DOCUMENTATION (ASPEC FORMAT)

See documentation checklist in Documentation Checklist below.

4.0 Documentation

4.1 OSPEC Asset Data Estimate at Practical Completion

The City of Cockburn has adopted a system of Asset Management, details of which can be found on the City's website at;

http://www.cockburn.wa.gov.au/Council_Services/Engineering_Services/Asset_Management/

Developers involved in conveying POS assets to the City are required to describe the contents and size of the new POS in the format required by the City's Asset Management System. A list of pro formas is included in the appendix to this POS development guide. These pro formas must be completed to the satisfaction of Parks Services prior to handover of the site

4.2 Documentation Checklist

The following schedules outlines the minimum level of documentation to be provided to the City of Cockburn for approval at each approval stage as outlined in Section 2.3 Development Process.

Planning Stage.

Identify capital assets to be protected during the development phase. Establish and describe Site Protection Zones (TPZs) on the Structure Plan.

Subdivision Stage

Describe and locate the following;

- TPZs and indicate existing and proposed levels within each TPZ.
- Proposed underground infrastructure (utilities and stormwater drainage outfalls)

POS Concept Submission

Drawing(s) to include:

- Conceptual design – indicative of proposed outcome
- Title block – including drawing name/number, revision, scale, north point and date issued
- Legend – clearly identifying hard works, soft works and furniture
- Indicative plant/tree species list
- Road names – to assist with identifying the location of the site
- Drainage features – indicating nominal extent and depth
- Existing site features – including existing vegetation to be retained.

Concept drawings may be hand drawn but shall be to scale.

Development Application Submission

Drawing set to include:

Finalised designs

- Title block – including drawing name/number, revision, scale, north point and date issued
- Legend – clearly identifying individual materials, finishes, furniture, lighting and other items
- Locality plan – including road names, showing context of site within broader area
- Plant/tree species schedule – including botanical names and planting densities
- Planting plan – indicating location and numbers of proposed species
- Irrigation drawings – detailing location and size of lines, sprinklers and control equipment
- Drainage features – indicating extent, depth, and indication of 1:1, 1:5 and 1:100 ARI levels
- Existing site features – including existing vegetation to be retained.

In addition to the drawing set, the following shall also be supplied at Development Application stage:

- Bore location and details – if proposing to install a new bore
- Schedule of maintenance tasks.

Final Completion Handover

- 'As constructed' irrigation, construction, and planting drawings
- Maintenance and operation manuals for bores, pumps etc.

4.3 Documentation Formats

All documentation shall be submitted as PDFs legible at A3 size.

As constructed drawings shall be submitted in the following formats

- PDF,

- 1no. hard copy and
- DWG (AutoCAD 2010 revision)

4.4 Example Drawings

The following drawings are an example only, to illustrate of the level of detail expected in submissions for each phase of a project. Strict adherence to the graphic styles presented is not necessary, provided the submission contains similar clarity of information.

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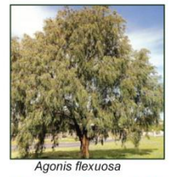

Agonis flexuosa


Banksia attenuata


Xanthorrhoea preissii


Anigozanthos humilis

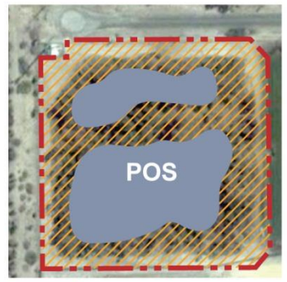

Eremophila glabra


Ficinia nodosa

typical planting schedule

SPECIES	COMMON NAME	MATURE HEIGHT
Trees		
Agonis flexuosa	Willow Peppermint	6m
Banksia attenuata	Candle Banksia	8m
Banksia illicifolia	Holly-leaved Banksia	7m
Casuaria obesa	Salt Sheoak	10m
Xanthorrhoea preissii	Grass Tree	3m
Shrubs		
Hibbertia racemosa	Stalked Guinea Flower	0.3m
Hovea pungens	Devils Pins	0.5m
Kunzea ericifolia	Spearwood	3m
Westringia dampieri	Coastal Rosemary	1m
Grasses & Sedges		
Anigozanthos humilis	Catspaw	0.5m
Anigozanthos manglesii	Mangles Kangeroo Paw	0.5m
Baumea juncea	Bare Twig-rush	1m
Conostylis candicans 'Aurea'	Grey Cottonhead	0.3m
Ficinia nodosa	Knotted Club Rush	1m
Juncus krausii	Sea Rush	1.5m
Orthrosanthus laxus	Morning Iris	0.5m
Verticordia densiflora	Compacted Featherflower	0.5m
Groundcovers		
Dryandra nivea	Couch Honeypot	0.2m
Eremophila glabra	Tar Bush	0.5m
Hemiandra pungens	Snake Bush	0.2m

bushland condition plan

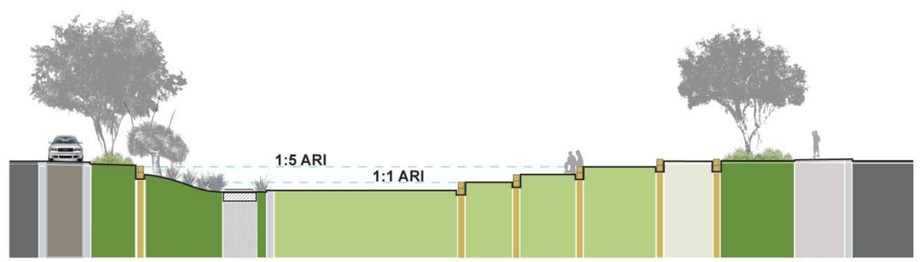


bushland condition - good

bushland condition - degraded

legend

- extent of site
- existing trees - retain
- 26 — existing contours
- +26.500 — proposed spot height
- trees - proposed
- mass planting (gravel mulch)
- revegetation (organic mulch)
- turf
- gravell path
- concrete footpath
- barrier fence
- retaining walls
- flush concrete edge
- potential picnic table
- soakwells



section A-A (not to scale)

City of Cockburn
wetlands to waves

AUTHOR: SR QA: JC PROJECT NO: 2293-09
SCALE: 1:500 @ A3
0 10 20m

SUBDIVISION NAME
DEVELOPER NAME

POS CONCEPT PLAN
SK01-A

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SUBDIVISION NAME, SUBURB

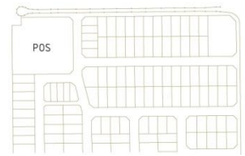
LANDSCAPE ARCHITECTURAL SITE DRAWINGS

ISSUED FOR APPROVAL

DWG NO.	DWG NAME	SCALE @ A1	REV
L00	COVER SHEET	1:1000	A
L01	PUBLIC OPEN SPACE	1:250	A
L02	PLANTING DETAILS	AS SHOWN	A
L03	HARDWORKS & FURNITURE DETAILS	AS SHOWN	A

REV	DATE	ISSUE
A	17.12.2012	ISSUED FOR APPROVAL

LOCATION PLAN



LEGEND

EXTENT OF WOR

NOTES

ALL COMPLETED WORKS TO BE PROTECTED AND MAKE GOOD ANY DAMAGE TO EXISTING WORKS CAUSED AS PART OF THIS CONTRACT. ALL WORK WITHIN DRIP LINES OF EXISTING TREES IS TO BE DONE BY HAND.

ALL SET OUT IS TO BE DONE BY A LICENSED SURVEYOR. THESE DRAWINGS WILL BE MADE AVAILABLE DIGITALLY TO THE SURVEYOR UPON REQUEST.

FIGURED DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS. INSETS AND DETAIL DRAWINGS TAKE PRECEDENCE & NOTIFY SUPERINTENDENT OF ANY IDENTIFIED DISCREPANCIES PRIOR TO UNDERTAKING WORK.

WRITTEN NOTIFICATION TO THE SUPERINTENDENT IS REQUIRED WITHIN TEN (10) WORKING DAYS OF TENDER ACCEPTANCE TO CONFIRM PLANT STOCK AVAILABILITY IN SPECIFIED SIZES AND NUMBERS AND DEPOSIT PAID. AFTER THIS TIME NO PLANT SUBSTITUTIONS WILL BE ACCEPTED. AFTER TEN WORKING DAYS, THE SUPERINTENDENT RESERVES THE RIGHT TO CHARGE THE CONTRACTOR $100.00/HR FOR SOURCING, PLANT SUBSTITUTIONS, AND/ OR REDESIGN.

WHERE MIXED PLANTING IS PROPOSED PLANT IN GROUPS OF 3, 5 OR 7 OF THE SAME SPECIES. ENSURE PLANTS FROM SEPARATE PALLETS/SUPPLIERS ARE MIXED BEFORE PLANTING. TREES REQUIRING STAKES USE AS DETAILED.

9 Coleville Crescent
Spearwood WA 6163
ph: (08) 9411 3444
web: www.cockburn.wa.gov.au

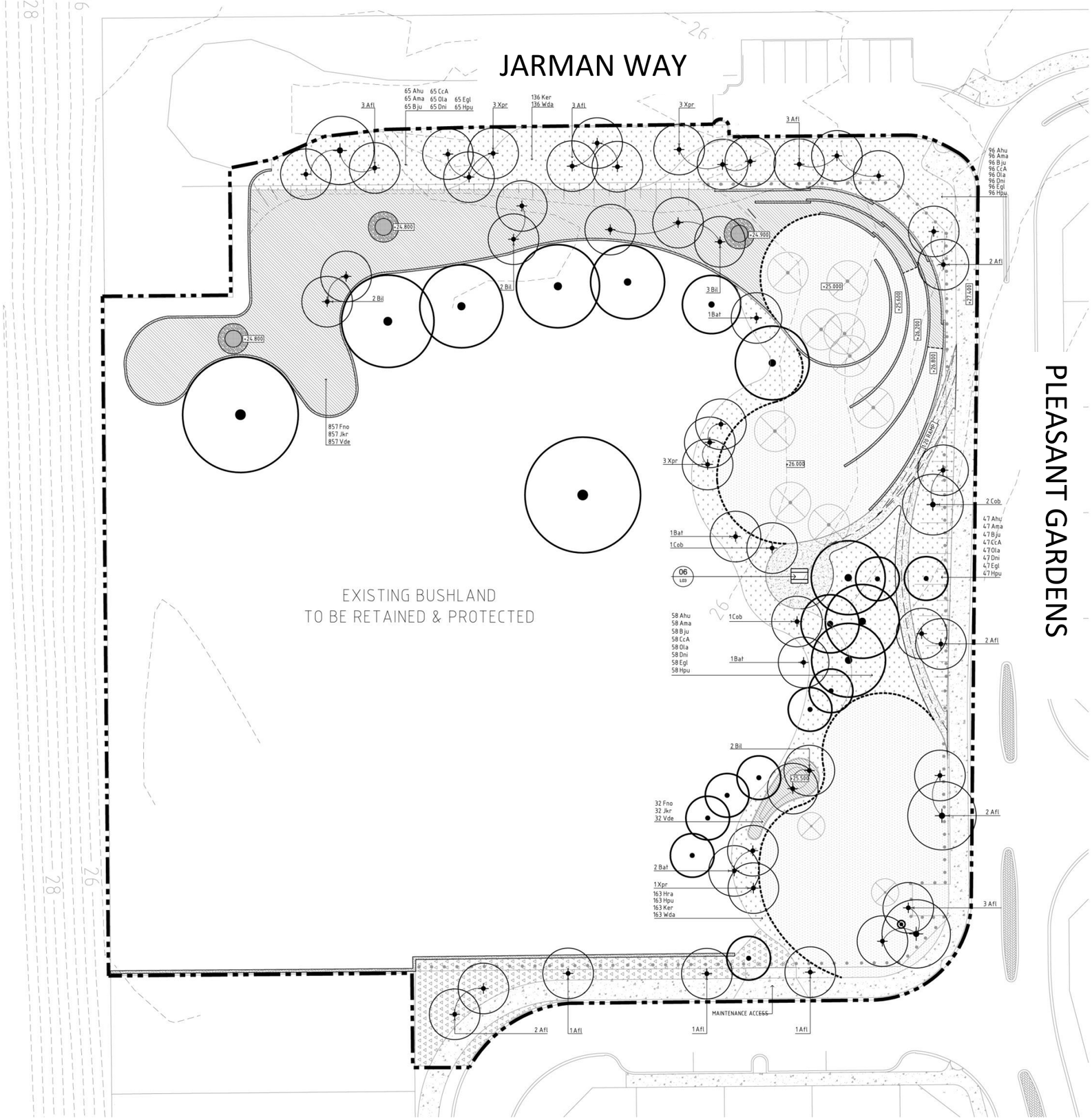
City of Cockburn
wetlands to waves

COVER SHEET

L00 - A

SCALE 1:1000 @ A1

0 10 20 30 40 50 100m



PLANT SCHEDULE

SYMBOL	SPECIES	COMMON NAME	POT SIZE	DENSITY
Trees				
Afl	Agonis flexuosa	Willow peppermint	45L	as shown
Bat	Banksia attenuata	Candle Banksia	45L	as shown
Bil	Banksia ilicifolia	Holly-leaved Banksia	45L	as shown
Cob	Casuaria obesa	Salt Sheoak	45L	as shown
Xpr	Xanthorrhoea preissii	Grass Tree (TRANSPLANTED)	-	as shown
Shrubs				
Hra	Hibbertia racemosa	Stalked Guinea Flower	tubestock	3 per sqm
Hpu	Hovea pungens	Devils Pins	tubestock	3 per sqm
Ker	Kunzea ericifolia	Spearwood	tubestock	3 per sqm
Wda	Westringia dampieri	Coastal Rosemary	tubestock	3 per sqm
Grasses & Sedges				
Ahu	Anigozanthos humilis	Catspaw	tubestock	3 per sqm
Ama	Anigozanthos manglesii	Mangles Kangeroo Paw	tubestock	3 per sqm
Bju	Baumea juncea	Bare Twig-rush	tubestock	3 per sqm
CcA	Conostylis candicans 'Aurea'	Grey Cottonhead	tubestock	3 per sqm
Fno	Ficinia nodosa	Knotted Club Rush	tubestock	3 per sqm
Jkr	Juncus krausii	Sea Rush	tubestock	3 per sqm
Ola	Orthrosanthus laxus	Morning Iris	tubestock	3 per sqm
Vde	Verticordia densiflora	Compacted Featherflower	tubestock	3 per sqm
Groundcovers				
Dni	Dryandra nivea	Couch Honeypot	tubestock	3 per sqm
Egl	Eremophila glabra	Tar Bush	tubestock	3 per sqm
Hpu	Hemiandra pungens	Snake Bush	tubestock	3 per sqm

REV	DATE	ISSUE
A	17.12.2012	ISSUED FOR APPROVAL

LOCATION PLAN

LEGEND

- PROPERTY BOUNDARY
- 28 — CONTOURS EXISTING
- +27.400 PROPOSED SPOT HEIGHT
- TREES EXISTING TO BE RETAINED
- TREES EXISTING TO BE REMOVED
- TREES PROPOSED
- PLANTING - MASS PLANTING (ORGANIC MULCH TO BE CULTIVATED IN TO SOIL PROFILE)
- PLANTING - REVEGETATION (ORGANIC MULCH)
- ROLL-ON TURF
- MULCH
- CONCRETE PAVING (BY OTHERS)
- CONCRETE PAVING
- CONCRETE EDGING
- LIMESTONE RETAINING WALL (BY OTHERS)
- PICNIC SETTING
- SOAKWELL WITH LIMESTONE SPALLING (BY OTHERS)
- BOLLARDS (BY OTHERS)
- BORE LOCATION

NOTES

ALL COMPLETED WORKS TO BE PROTECTED AND MAKE GOOD ANY DAMAGE TO EXISTING WORKS CAUSED AS PART OF THIS CONTRACT. ALL WORK WITHIN DRIP LINES OF EXISTING TREES IS TO BE DONE BY HAND.

ALL SET OUT IS TO BE DONE BY A LICENSED SURVEYOR. THESE DRAWINGS WILL BE MADE AVAILABLE DIGITALLY TO THE SURVEYOR UPON REQUEST.

FIGURED DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS. INSETS AND DETAIL DRAWINGS TAKE PRECEDENCE & NOTIFY SUPERINTENDENT OF ANY IDENTIFIED DISCREPANCIES PRIOR TO UNDERTAKING WORK.

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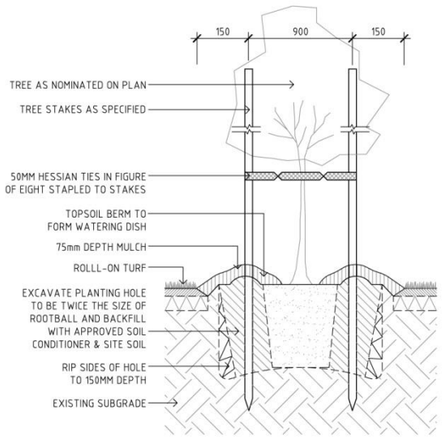
City of Cockburn
wetlands to waves

PUBLIC OPEN SPACE

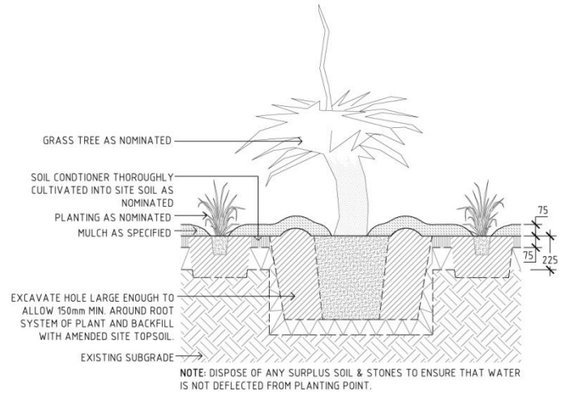
L01-A

SCALE 1:250 @ A1

0 2.5 5 7.5 10 12.5 25m

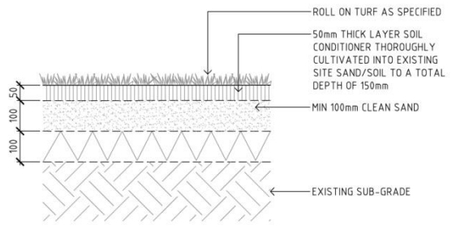


01 L02 **TREE PLANTING**
TYPICAL DETAIL SECTION — SCALE 1:20 @ A1



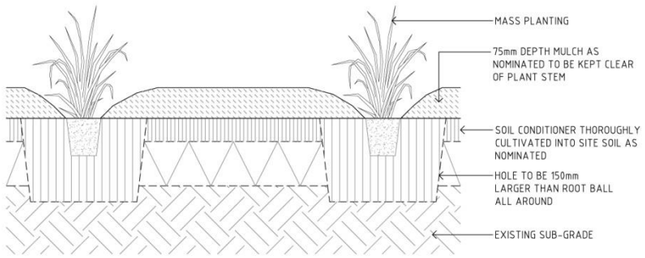
NOTE: DISPOSE OF ANY SURPLUS SOIL & STONES TO ENSURE THAT WATER IS NOT DEFLECTED FROM PLANTING POINT.

02 L02 **TRANSPLANT IN MASS PLANTING**
TYPICAL DETAIL SECTION — SCALE 1:20 @ A1



NOTE: ALL TURF TO FINISH 15mm ABOVE TOP OF ANY ADJOINING SURFACE FINISH.

03 L02 **ROLL-ON TURF**
TYPICAL DETAIL SECTION — SCALE 1:10 @ A1



NOTE: DISPOSE OF ANY SURPLUS SOIL & STONES TO ENSURE THAT WATER IS NOT DEFLECTED FROM PLANTING POINT

04 L02 **MASS PLANTING**
TYPICAL DETAIL SECTION — SCALE 1:10 @ A1

REV	DATE	ISSUE
A	17.12.2012	ISSUED FOR APPROVAL

LOCATION PLAN

LEGEND

NOTES

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ALL SET OUT IS TO BE DONE BY A LICENSED SURVEYOR. THESE DRAWINGS WILL BE MADE AVAILABLE DIGITALLY TO THE SURVEYOR UPON REQUEST.

FIGURED DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS. INSETS AND DETAIL DRAWINGS TAKE PRECEDENCE & NOTIFY SUPERINTENDENT OF ANY IDENTIFIED DISCREPANCIES PRIOR TO UNDERTAKING WORK.

WRITTEN NOTIFICATION TO THE SUPERINTENDENT IS REQUIRED WITHIN TEN (10) WORKING DAYS OF TENDER ACCEPTANCE TO CONFIRM PLANT STOCK AVAILABILITY IN SPECIFIED SIZES AND NUMBERS AND DEPOSIT PAID. AFTER THIS TIME NO PLANT SUBSTITUTIONS WILL BE ACCEPTED. AFTER TEN WORKING DAYS, THE SUPERINTENDENT RESERVES THE RIGHT TO CHARGE THE CONTRACTOR $100.00/HR FOR SOURCING, PLANT SUBSTITUTIONS, AND/ OR REDESIGN.

WHERE MIXED PLANTING IS PROPOSED PLANT IN GROUPS OF 3, 5 OR 7 OF THE SAME SPECIES. ENSURE PLANTS FROM SEPARATE PALLETS/SUPPLIERS ARE MIXED BEFORE PLANTING. TREES REQUIRING STAKES USE AS DETAILED.

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Spearwood WA 6163
ph: (08) 9411 3444
web: www.cockburn.wa.gov.au

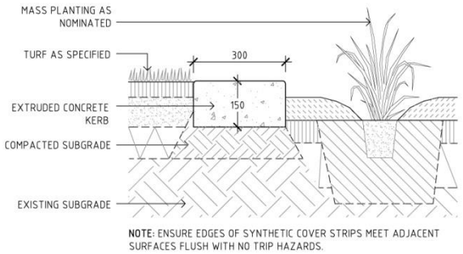
City of Cockburn
wetlands to waves

PLANTING DETAILS

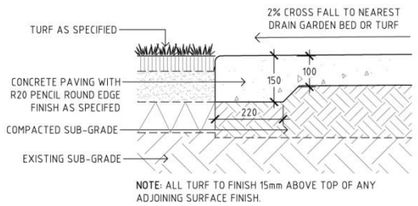
L02 - A

SCALE AS SHOWN

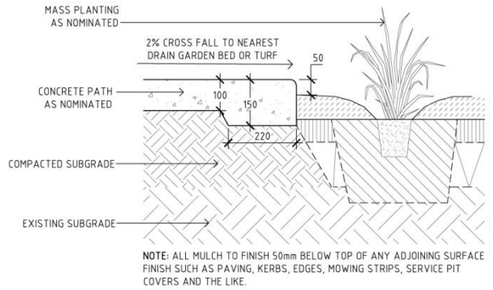
0 0 0 0 0 0 0m



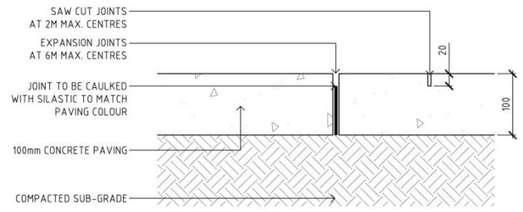
01 L03 TURF TO MASS PLANTING
TYPICAL DETAIL SECTION SCALE 1:10 @ A1



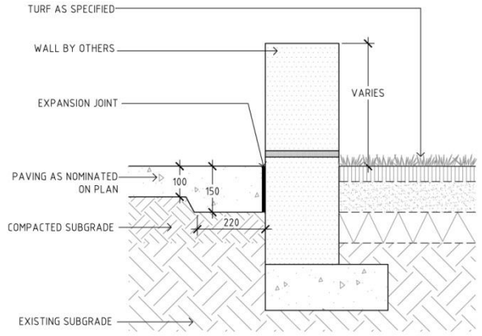
02 L03 CONCRETE PAVING TO TURF
TYPICAL DETAIL SECTION SCALE 1:10 @ A1



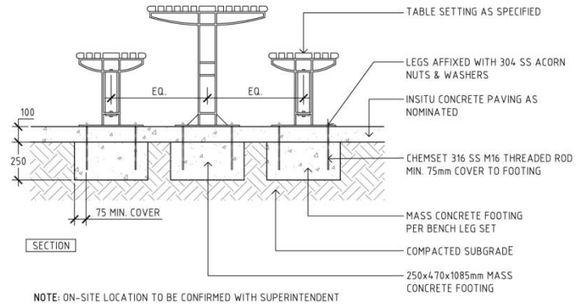
03 L03 CONCRETE PAVING TO MASS PLANTING
TYPICAL DETAIL SECTION SCALE 1:10 @ A1



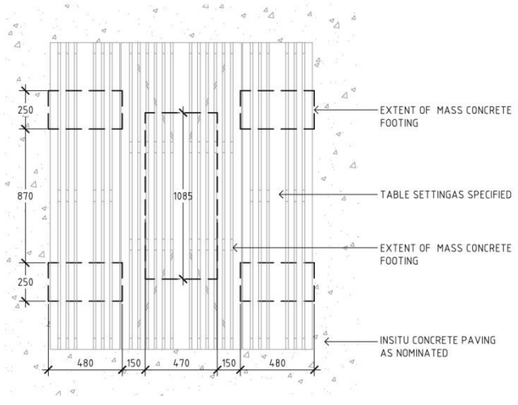
04 L03 CONCRETE JOINTS
TYPICAL DETAIL SECTION SCALE 1:5 @ A1



05 L03 CONCRETE PAVING TO WALL
TYPICAL DETAIL SECTION SCALE 1:10 @ A1



06 L03 PINCIC SETTING
DETAIL SECTION SCALE 1:20 @ A1



07 L03 PINCIC SETTING
DETAIL PLAN SCALE 1:20 @ A1

REV	DATE	ISSUE
A	17.12.2012	ISSUED FOR APPROVAL

LOCATION PLAN

LEGEND

NOTES

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City of Cockburn
wetlands to waves

HARDWORKS & FURNITURE DETAILS

L03 - A

SCALE AS SHOWN

0 0 0 0 0 0 0m

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5.0 Appendices

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5.1 *Pro forma* for OSPEC Asset Data Estimate at Practical Completion

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City of Cockburn

Public Open Space Landscape Documentation and OSPEC Asset Data Estimate at Practical Completion

Practical Completion Date	
Proposed Handover Date	
Name of Developer	
Title of Subdivision	
Applicable Plan Numbers	
Name of Landscape Company	
Contact Telephone Number	
Signature of Landscape Co Representative	

Name of Public Open Space (if applicable)	
Address of Public Open Space	
Hectares of Lawn	
Hectares of Garden Bed	
Development / Entry signs to be removed	
Residential Verges to be Disconnected	
DoW Groundwater Licence to be Transfer	
Services to be transferred (Power / Gas/ Water)	

ATTENDEES:

_____ _____

_____ _____

_____ _____

COMMENTS: _____

Asset Data Received Y/N _____ _____

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INFRASTRUCTURE ASSETS

Type	Material 1	Material 2	Surface Type	Length	Width/ Height	Area/ Quantity	COST	Manufacturer	Model_No

Blank Page

BORE/ IRRIGATION ASSETS

Type	Material	Depth	Length	Diameter	Gauge/ thickness	Area/ Bore Size	Bore Flow	No of Units	COST	Manufacturer	Model_No

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5.2 Site Protection Zones (SPZs).

Establishing the SPZ.

Prior to developing bulk earthwork and demolition proposals the developer shall identify elements within the POS sites that are likely to be of value to the development of the POS if retained.

Artefacts (such as old dry stone walls, or relics left by former site uses) or vegetation (such as areas of natural bushland, or large and visually significant trees) are typically valuable for conveying to new communities the character and appearance of the place before development. Retaining Natural Areas is useful for providing habitat and food sources for wildlife, whereas individual trees can provide shelter and a sense of permanence to a new development.

The extent of a SPZ will be determined by the nature of the elements being retained.

It may be appropriate to establish the SPZ against the sides of an artefact, whereas a large mature tree will require an area at least as large as the tree's canopy. Natural Areas will require consideration of the changes to the surrounding areas, a sacrificial buffer around the Natural Area may be necessary to counter the tendency for 'edge effect' to denude natural vegetation further (see the City's Natural Area Management Strategy for guidance in this respect).

Protecting the SPZ.

The extent and location of the SPZ shall be agreed with the City of Cockburn's Parks Services team prior to submitting demolition or earthwork designs for any POS site or surrounding estate roads or development lots.

The type of protection the SPZ requires will vary with circumstance, however developers should anticipate a 1.8m chain mesh with a vehicular width gate will be required to record the perimeter of each SPZ on site.

To ensure the succession of subcontractors and other site operatives involved in the construction process are aware of the purpose and degree of protection afforded the SPZ an A3 core flute sign shall be attached to the outward face of the SPZ fence every 15m with four cable ties (one per corner).

This sign shall read as per the example on the following page.

SPZs shall remain until handover of the POS to the City. Removal of the SPZ boundary fence shall only be permitted with the approval of the City's Subdivision Engineer at a stage agreed with the City's Parks Services team.

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Site Protection Zone

The area within this fence has been identified for protection from construction site activities.

Within this fence line …

Do Not	Do
1. Alter ground level 2. Store materials 3. Light fires 4. Park vehicles 5. Damage or relocate the fence, vegetation or artifacts	1. Seek permission from the City's Subdivision Engineer to carry out necessary agreed works within the fence line 2. Report to the City of Cockburn's Subdivision Engineer any disturbance to the site or its protective fence. 3. Report to the City's Subdivision Engineer any decline, damage or other changes in the appearance of vegetation within the fence 4. Ensure any agreed irrigation system is operating. 5. Ensure any protective mulch layer on within the SPZ is maintained topped up to 100mm depth.

The City's **Subdivision Engineer** can be contacted by calling the City's Engineering Division on **9411 3554**.

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5.3 Parks and Environment AutoCAD drafting conventions.

POS documentation provided in DWG format shall comply with the following drafting conventions.

Drawings may be prepared in colour, but must remain legible if photocopied/faxed in black and white.

The drawing number, title, revision letter, north arrow, bar scale and scale at a nominated paper size shall all appear on every drawing (drawings must be legible at A3).

Sets of drawings shall be listed on a contents page at the same size and format as the drawing set.

Layer Naming/Layer Discipline.

All drawing layers produced by the Consultant shall be named commencing with the Consultants initials.

Following the Consultants initials all layers shall commence with **one** of the following prefixes;

L (for Line)

H (for Hatch)

I (for Image)

T (for Text)

These words shall indicate the type of object on each layer respectively.

Following the object type, the layers shall describe the element represented on that layer. This shall be as succinct a word as possible. For example;

Trees

Kerbs

Footpath

Buildings

Walls

Roads

Furniture

and so on.

Following each element name, any specific quality of that element may be used to differentiate it. For example;

Trees Proposed

Kerbs Barrier

Footpath Concrete

Buildings Demolished

Walls Retained

Roads Asphalt

Furniture Bench and so on

Hence the layer labelled “LA L Trees Proposed” will appear adjacent to “LA Line Trees Felled” enabling all lines describing similar elements to be identified and grouped together in the layer control pane. The creator of each layer will also be self evident (by the initials used), and all layers created by a single author will appear adjacent to each other.

Prior to issue each layer shall be checked by the consultant using the layer isolate command on each layer in turn. Objects that appear on an inappropriate layer during this process shall be moved to their correct layer.

Viewports

All View ports shall be locked, with the non-printing symbol checked on the layer control pane, and located on a layer described as VP.

PSLTSCALE command setting shall be set at 0 for all viewports.

All layers shall be switched on in model space; unwanted layers in Viewports shall be removed through Viewport freezing. This allows all objects to be visible when the file is viewed in model space, avoiding the impression of information being lost on frozen or ‘off’ layers in when the drawing is viewed in model space.

Plot Styles.

The plot style shall use the order of the colours in the default index colour bar to describe ever thickening lines on the finished print. For example;

Line thickness shall be nominated by the author to suit the size and format of the drawing when printed (note the requirement for legibility at A3 pertains to this issue).

Hatching

Solid hatches shall be in **non index** colours to allow expression of the colour in the printed document.

Non solid hatches may use **index** colours so that they appear black when printed.

Text within hatched areas or overlying photographs shall employ a background mask to aid legibility of text when reproduced in black and white.

Raster Images

Image frames shall be switched off prior to issuing drawings.

Xrefs

Files shall not be greater than 10MB. To reduce file sizes, drawings may use Xreffed 'base' drawings to allow emailing to/from the City's officers. Xrefs may be emailed separately and re-inserted upon receipt of the drawing.

Coordinates

Ensure all Z coordinates on 2D drawings are set at 0 to avoid errors in taking off quantities and errors in drafting (note - many topographical surveys are routinely made in 3D).

Polylines

Ensure all fragmented lines that are intended to be one object are joined, and all polygons are closed, by auditing the drawing with the properties manager prior to issuing drawing.

Annotations and Dimensions

All annotations and dimensions shall comply with the City of Cockburn's style guide, and shall be inserted onto paper space. Dimensions shall be generated using the dimension command, and scaled in the dimension manager to suit the scale of the Viewport.

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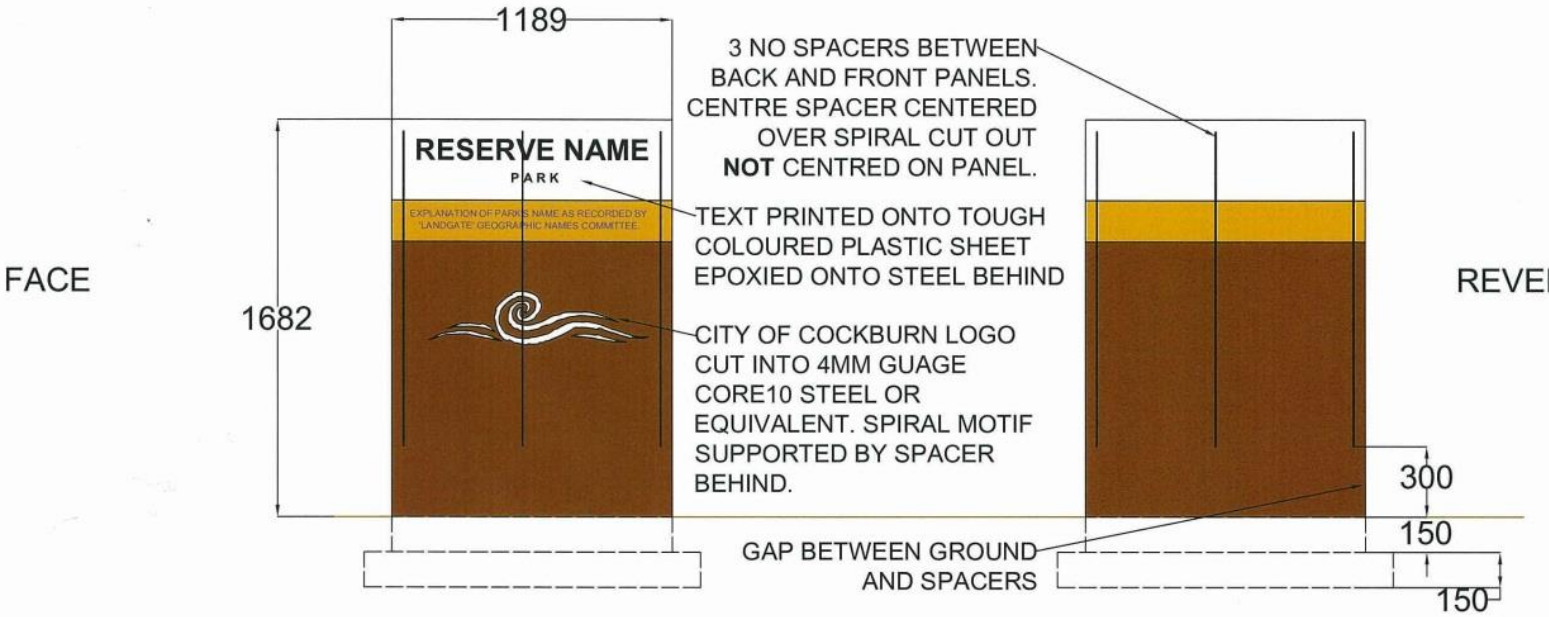

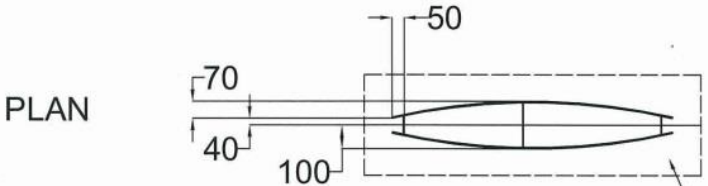

Colours.

Orange	**Purple**	**Grey**
PMS 124	PMS 7447	PMS422
R234 G171	R90 G68	R162 G164
B0 or	B122 or	B163 or
C0 M27	C76 M77 Y6	C16 M11 Y11
Y100 K0	K18	K29

CITY OF COCKBURN PARK NAME SIGN TEMPLATE

(nts DIMENSIONS IN MILLIMETRES).

As resolved at the Reconciliation Action Plan meetings, the City will introduce a small sample of Nyungar words (with an English translation) to the back of its new Park Name signs. These new signs have already been placed in Manning Park and a few other parks, but without Nyungar dictionaries on the back of them.
In the future, each new name sign will have a series of 10 to 15 words translated on the back of them. This will introduce people to the Nyungar language slowly and encourage them to memorise the words on their local park's sign and to explore and memorise new words when they visit other parks.

Djidar (*Sunlight*) **Djeran** (*April-May*) **Burong** (*Rain*) **Wanju** (*Welcome*) **Yoont** (*Yellow*) **Dambart** (*Three or more*) **Koomal** (*Brush-Tailed Possum*) **Yooraan** (*Bobtail Lizard*) **Ngibart** (*A poisonous snake*) **Kwadalang** (*Butcherbird*) **Djilgi** (*Freshwater fish/prawn*) **Dhundjar** (*Edible frogs*) **Wirt** (*White Ant Nest*) **Djirridj** (*Zamia Palm*)

Nyungar English Dictionary

http://www.wheatbeltnrm.org.au/resources/nyungar-dictionary.pdf