LOCAL PLANNING SCHEME NO. 10

LOCAL PLANNING POLICY NO. 3 - WATER SENSITIVE DESIGN

POLICY OUTLINE

1. OPERATION OF THIS PLANNING POLICY

(a) This planning policy has been prepared in accordance with Part 2 of the Town Planning Amendment Regulations 1999.

(b) This policy does not bind the Council in respect of any application for planning approval but the Council will have due regard to the provision of the policy and the objectives which the policy is designed to achieve before making its determination.

(c) If a provision in this policy is inconsistent with the:

(i) Environmental Protection (Swan Canning Rivers)Policy 1998, the Environmental Protection Policy Prevails; and
(ii) The Town of Bassendean Town Planning Scheme, the Scheme prevails.

(d) This policy applies to rezonings, structure plans, subdivisions and development proposals and applies throughout the Town of Bassendean.

2. STATEMENT OF INTENT

There is concern about the quality of water discharging from drains into water bodies such as the Swan and Canning Rivers. Stormwater runoff carries sediments and pollutants such as nutrients and heavy metals from impervious surfaces. The Swan-Canning Cleanup Program (1999) highlights the need to address water quality in drainage from rural and urban land uses. A mechanism to address water quality of stormwater runoff from developed areas is through Water Sensitive Urban Design.

The principles are the detention and retention of stormwater to increase filtration of pollutants by soil, vegetation or other physical means rather than direct conveyance to a water body.

The Bayswater Main Drain Catchment Management Strategy (1994) recommends the adoption, where practical, of water sensitive urban design for new development and redevelopment within the catchment by local Government authorities. The Eastern Metropolitan Regional Environmental Strategy (RES) (2000) recommends that member councils adopt Water Sensitive Design Planning principles, develop drainage plans and adopt Stormwater Quality Management Guidelines.

The Environmental Protection (Swan-Canning Rivers) Policy 1998[1] requires that all government agencies including local government, when making decisions, ensure that drainage systems are designed, constructed and operated:

(i) in accordance with best management practice; and

(ii) "in order to prevent and mitigate land degradation (Clause 17 (a) (ii)).

The Local Government Guidelines for Subdivisional Development, produced by the Institute of Municipal Engineering WA Division in 1998 promotes the adoption of Water Sensitive Urban Design principles.

The Community Codes (*Liveable Neighbourhoods*) published by the Ministry for Planning in 2000 emphasises Water Sensitive Urban Design (nutrient stripping, swales, incorporation of drainage in public open Space) and provides incentives of up to 3% credit in the 10% Public Open Space (POS) requirement for the adoption of Water Sensitive Urban Design.

3. DEFINITIONS

"Best Management Practice" means best management practices developed under clause 11 of the Environmental Protection (Swan and Canning Rivers) Policy 1998, and assessed in the context of this policy.

Until such time as best management practices are published by the Environmental Protection Authority the use of interim best management practices as published by the Water and Rivers Commission's "*A manual for managing urban stormwater quality in Western Australia*" dated August 1998 will be used in conjunction with the Principles for design and assessment of best management practices (ie, Section 5 of this policy) and the Towns engineering specifications and conditions relating to developments and subdivision.

"**AAMGL**" Average Annual Maximum Groundwater Level

"**Multiple Use Corridor**" linear reserve which integrates drainage function as well as conservation and recreation values.

"**Treatment Train**" means application of several types of physical stormwater best management practices in line in a series to achieve improved drainage water quality output to water bodies.

"**Xeric Landscape**" landscape consisting of native or adapted plants which require nil or minimal watering

4. POLICY OBJECTIVES

(a) This Water sensitive Design Policy is to assist in protecting the beneficial uses of the Swan and Canning River and watercourses, consistent with the requirements of the Environmental Protection (Swan and Canning Rivers) Policy 1998. The beneficial uses include:

* as habitat for the maintenance of the diversity and abundance of locally indigenous fauna and flora species;

* to maintain ecological processes;

* as an important recreational element; and

* as natural landscape.

(b) Ensure water sensitive design best management practices are implemented for all new development proposals so as to minimise nutrient and other pollutants exported to the Swan-Canning rivers;

(c) Protect and where possible restore and enhance the environmental and social (ie, recreation and scenic) values of waterways and protected wetlands; and

(d) Retain or enhance open drains by converting them to "living streams' in multiple use corridors that provide habitat for wildlife and passive recreation opportunities wherever possible.

5. APPLICATION OF THE POLICY

The principles of Water Sensitive Urban design are to be incorporated into urban development through the application of best management practices. The extent to which the various best management practices are selected for implementation will depend on the scale of development. For example, there will be greater opportunities to incorporate structural best management practices at the structure planning or subdivision scale than at the single lot level. For approval at a split or higher R-Code, developments will be required to meet these design guidelines.

Principles for design and assessment of best management practice.

The application of water sensitive planning and management principles involves:

i) incorporation of water resource issues early in the land use planning process;

ii) addressing water resource management at the catchment and sub-catchment level;

iii) storage and stormwater reuse and stormwater treatment occur as high as possible in the catchment- use of a treatment train approach with the components of stormwater management located so that they follow the natural contours;

iv) property is protected from flooding or damage by surface water or groundwater;

v) post urban development conditions in watercourses approximate pre urban conditions (ie, water level and flow regimes are maintained);

vi) stormwater system design incorporates as much as possible features of waterways that improve water quality;

vii) the use of vegetation (particularly indigenous vegetation) in stormwater management to promote filtering and slowing of runoff to maximise settling of particulate-bound pollutants; and

viii) multiple use corridors are used when appropriate.

The following are examples of structural best management practices which encompass the above principles:

- Onsite detention;
- Stormwater infiltration systems;
- Buffer strips;
- Pollutant traps (eg, Continuous Deflection Separators);
- Grass or reed swale drains;
- Broken or flush kerbing;
- Ponds and wetlands; and
- Native or Xeric landscaping.

Selection of best management practices should follow that suggested in the Water and Rivers Commission's *Manual for Managing Urban Stormwater Quality in Western Australia.* (Stormwater best management practice selection chart to be included in appendices)

5.1 Non- structural best management practices

A comprehensive approach to storm water management also involves the promotion of non-structural best management practices. These include source controls such as:

- education of residents on appropriate plant species, fertiliser and water use;
- street sweeping regimes; and
- improved waste and stormwater management for industrial premises.

5.2 Incorporation of water resource issues early in the land use planning process

The earlier that stormwater management is addressed in the land use planning process the more opportunity there generally is for integration of structural mechanisms to ensure water quality. Ideally it should form part of the initial site analysis prior to structure planning and sub-division. For small residential subdivisions (<5ha) and redevelopments in which ponds or wetlands may not be feasible inline controls such as pollutant traps may be more appropriate.

5.3 Addressing water resource management at the catchment and sub-catchment level

Sub-catchments should be used to determine drainage system design. Developments low in the catchment should be designed with due regard to existing and proposed land use as reflected in the Town Planning Scheme and the volumes and quality of stormwater or subsoil drainage water likely to be generated upstream.

5.4 Storage, stormwater use and stormwater treatment occur as high as possible in the catchment, a treatment train approach is used and components of stormwater management are located so that they follow natural contours

Stormwater treatment such as detention should occur at source or on-site if practicable. Structural best management practices are most effective when they can be combined in a series, as a treatment train preferably connected by grass or reed swales or multiple use corridors (through public open space). Storage areas should be an integral part of the landscape, wherever possible. The use of the treatment train can increase pollutant removal effectiveness, allow for filtration of suspended solids, or overcome site factors that limit the effectiveness of a single measure.

The detention capacity of the treatment train should be capable of retaining the first flush and constructed according to the design criteria provided by the Water and Rivers Commission hydrological effectiveness graphs (*Manual for Managing Urban Stormwater Quality in Western Australia pp 20, 21*)

Wherever possible use should be made of stormwater runoff. Car parks in commercial developments should direct runoff water into landscaped swales by use of flush or broken kerbing to reduce the irrigation requirement and filter stormwater pollutants. Porous paving materials should be encouraged, especially for parking areas that are infrequently used or are low traffic volume areas.

Mechanisms to trap sediment should be in place to remove sediment 100 microns or more.

5.5 Protecting property from flooding

5.5.1 Water Courses and main drains

All development along watercourses, main drains and overland flow paths for the 100 year storm recurrence interval shall have floor levels at 500mm above the 100 year flood level.

Watercourses and main drainage reserves should be of sufficient width to allow for 1:6 batters, appropriate access for maintenance or 1:8 (for revegetation) and the floodway associated with the 100 year event. This would normally result in a minimum reserve width of 30m. However, to allow for natural meandering of a watercourse and the floodplain a 50m reserve width is preferred.

5.5.2 Groundwater levels

To protect housing from flooding and damage from groundwater, development in areas where the Average Annual Maximum Groundwater Level (AAMGL) is at or within 1.2m of the surface, the importation of clean fill will be required together with the provision of sub surface drainage placed at the AAMGL. In areas where the AAMGL is more than 1.2m from the surface, subsurface drainage may still be required to restrict the rise in groundwater and ensure that adequate separation of building floor slabs from groundwater is achieved.

The AAMGL should be determined to the satisfaction of the Water and Rivers Commission.

5.6 Maintaining water level and flow regimes

5.6.1 Water levels –Protected wetlands

Where it is deemed that a proposal is likely to have a potential impact on the hydrological regime of a protected wetland a hydrological study will be required to determine how the water level regime of the wetland can be maintained.

As a general guideline, a hydrological study is likely to be required where drains that alter groundwater levels (eg, subsoil drains) are used within 100m of a protected wetland, or if drainage into a wetland is proposed.

5.6.2 Water flows –Watercourses

In order to prevent instream erosion, peak flows in water courses should not exceed pre-development conditions for the particular storm average recurrence interval (eg, the peak flow reaching the water course from the catchment in a 10 year event should remain the same after development).

Longer duration low-level flows in watercourses to maximise detention times in detention ponds consistent with the advice in the Water and Rivers Commission *Manual For Managing Urban Stormwater Quality in Western Australia* are acceptable to enable increased water volumes to be discharged off-site.

Adequate on site detention is required to ensure this criterion can be met.

5.6.3 Development of Private Open Space

Drainage from paved areas should be directed to garden beds or lawn or use of porous paving surfaces encouraged.

Low water and nutrient requiring plants should be required in landscaping such as native or adapted xeric plants to reduce the need for artificial fertilisers and watering.

5.7 Incorporating landscape enhancing features to improve water quality

Features that improve water quality that should be incorporated into stormwater drainage systems include:

- Native vegetation-in particularly reeds and rushes should be to promote filtering of nutrients and sediments;
- Boulders or riffles improve aeration and oxygenation;
- Ponds, pools or stormwater gullies designed as sediment traps; and
- Drain or watercourse profiles that provide a range of fauna habitats.

5.8 Retaining and rehabilitating protected wetland and watercourse fringing vegetation

Fringing vegetation should not be removed from within the following buffer zones:

Watercourses with permanent water or protected wetlands	50m
Seasonally flowing watercourses	30m
Watercourses which flow in response to specific rain events	10m

Removal of non-native vegetation in a manner that replaces it with native vegetation and minimises potential soil erosion is encouraged, except where the non-native vegetation has identified landscape or heritage value.

Foreshore management proposals are assessed in terms of the achievement/ replication of natural processes, and integration of passive recreation whilst maintaining conservation values.

As a minimum watercourses should be revegetated with native vegetation for 10m either side of watercourses which flow in response to specific rain events and 15m either side of other watercourses.

As a minimum, protected wetlands should be revegetated consistent with vegetation zones that would naturally occur in a wetland to at least 15m from the high water mark or 1m higher than the high water mark whichever is the smaller.

Batters and reserve widths are addressed under "Protection of property from flooding" above.

5.9 Using Multiple use corridors and open drains

Existing open drains should be assessed for their potential to provide for the multiple uses of recreation, stormwater management and the restoration and maintenance of environmental values through conversion to meandering streamlined channels.

There should be no net loss of existing open drain habitat, based on the extent (ie area) of open water and wetland vegetation provided by the drain. Transfer of habitat to a multiple use corridor/streamlined meandering channel is acceptable, but timing to minimise the period when habitat is not available should be considered.

Multiple use corridors width may vary according to site characteristics. However a minimum of 50m is recommended with additional width if needed for recognising floodway characteristics and protection of foreshore vegetation.

Management plans should be prepared for multiple use corridors. Multiple use corridors should be divided into zones or priority use areas for management purposes.

APPENDIX 1 - WATER SENSITIVE DESIGN POLICY CHECKLIST

Section	Policy Application	Structure Plan	Subdivision	Development Application
5.1	Early incorporation of water resource issues in planning			
5.2	Drainage design based on sub- catchments			
5.3	Treatment Train approach from top of catchment			
	Stormwater management components follow natural contours			
	Detention capacity able to retain first flush			
	Detention capacity to meet appropriate hydraulic and detention time criteria			
	Car park runoff to landscaped detention swales			
	Sediment less that 100 microns trapped			
5.4	Floor levels >500mm above 1:100			
	Waterway batter slopes maximum 1:8			
	Waterway reserve adequate width			
	AAMGL calculation meets W&RC requirements			
	Drainage at or above AAMGL and soil surface >1.2m above AMGL			
5.5	Hydrological study undertaken for protected wetlands			
	Post development flows approximate pre development flows through adequate detention			

Section	Policy Application	Structure Plan	Subdivision	Development Application
	Runoff from paving directed to garden or lawn areas			
	Encourage use of pervious paving materials			
5.6	Natural features incorporated into stormwater design (eg native vegetation, riffles & pools)			
	Easily maintained sediment traps included			
5.7	Existing fringing vegetation protected			
	Fringing vegetation rehabilitated (10 or 15m)			
	Passive recreation catered for along foreshores			
	No net loss of open drain habitat			
	Potential for Multiple Use Corridors evaluated			
5.8	Multi Use Corridors zoned			
	Management plans for Multiple Use Corridors prepared			