

LOCAL PLANNING POLICY WATER SENSITIVE URBAN DESIGN

1 POLICY OBJECTIVES

- 1.1 To improve the achievement of total water cycle management outcomes via the planning and development approvals process, consistent with *State Planning Policy 2.9: Water Resources* (2006) and *Better Urban Water Management* (WAPC, 2008);
- 1.2 To achieve better integration of land and water planning and thereby improved water management outcomes for the catchments within the local government area; and
- 1.3 To ensure that land use planning decisions are consistent with the requirements of environmental protection policy and compatible with the achievement of relevant objectives and environmental criteria.

2 POLICY PURPOSE

This policy aims to facilitate the application of better urban water management practices as part of the planning approvals process to enhance the sustainable use and management of water resources, demonstrated via commitments to water quality, quantity and efficiency targets and design objectives for strategic planning, subdivision and development.

3 INTERPRETATIONS

For the purpose of interpreting this policy, all terms shall have the meaning given under the provisions of Council's Town Planning Scheme No XX. In addition, the following definitions apply.

Best Management Practice – Devices, practices or methods for removing, reducing or preventing targeted pollutants from reaching receiving waters and for reducing runoff volumes and velocities. Includes structural and non-structural controls.

Controlled Groundwater Level - The controlled (ie modified) groundwater level (measured in metres Australian Height Datum) at which drainage inverts are set. This level must maintain the hydrologic regimes of groundwater dependent ecosystems, such as wetlands, that are to be protected.

Maximum Groundwater Level - must be determined through modelling and/or measurement. Where the Maximum Groundwater Level is at or near the surface, the importation of clean fill and/or the provision of sub surface drainage will be required to address inundation and/or rising damp and ensure that adequate separation of building floor slabs from groundwater is achieved. Any sub-surface drainage will need to be placed at a Department of Water/Department of Environment and Conservation approved controlled groundwater level.

Non-Structural Practices - institutional and pollution prevention practices that prevent or minimise pollutants from entering stormwater runoff and/or reduce the volume of stormwater requiring management. They do not involve fixed permanent facilities

and they usually work by changing behaviour through government regulation, persuasion and/or economic instruments. Such practices use alternative maintenance procedures, regulatory measures, economic incentives, education of management and technical personnel, or planning and design of structures to reduce the amount of pollutants entering stormwater and accumulating on impervious areas.

Small-scale development – infill or brownfield development or redevelopment of less than thirty lots.

Structural Practices – Structural stormwater quality and quantity best management practices are permanent, engineered devices implemented to control and improve stormwater quality and restore natural hydrological flows and velocities. Structural controls should be installed at or near the source of run-off/pollutant inputs, to prevent or treat pollution and manage the quantity of stormwater as high in the catchment as possible.

Total water cycle management - water supply, stormwater, groundwater and sewage services are interrelated components of catchment systems, and therefore must be dealt with using an holistic water management approach that reflects the principles of ecological sustainability. Water efficiency, re-use and recycling are integral components of total water cycle management.

Treatment train - application of several types of stormwater best management practices in series or designed to achieve improved stormwater management.

Water Sensitive Urban Design (WSUD) – The philosophy of achieving better water resource management outcomes in an urban context by using an integrated approach to planning and incorporating total water cycle management objectives into the planning process. The key elements of this design include protection from flooding; management of water quantity and quality to achieve ecological objectives; and water conservation, efficiency and re-use.

Xeriscape landscape - consisting of native or adapted plants which require nil or minimal watering.

4 APPLICATION

This policy applies to strategic and statutory proposals¹ that facilitate residential, commercial, industrial or rural-residential zoning, subdivision or development.

This Policy does not apply to rural zoned land, except where non-rural development is proposed or where the land is the subject of a Scheme Amendment which would enable the development of residential, commercial or industrial uses, in which case it would apply.

The application of this policy is limited to proposals within the XXX Catchment area of the City of XXX (refer [Appendix 1](#) for location map).

¹ Proposals include but are not limited to Local Planning Strategies, Local Rural Strategies, Planning Scheme Amendments, Structure Plans, Outline Development Plans, Detailed Area Plans, Subdivision Guide Plans, Subdivision Referrals, and Applications for Planning Consent

5 WSUD PRINCIPLES

Water Sensitive Urban Design principles shall be applied when undertaking strategic and statutory planning within the [City of XXX](#). These principles, in order of priority, are as follows.

- 5.1 Provide protection to life and property from flooding that would occur in a 100 year Average Recurrence Interval (ARI) flood event.
- 5.2 Maximise water use efficiency, reduce potable water demand, maximise use of wastewater and maximise the use of harvested water.
- 5.3 Manage rainfall events to minimise runoff as high in the catchment as possible. Use multiple low cost 'in-system' management measures to reduce runoff volumes and peak flows (for example, maximise infiltration from leaky pipes and stormwater pits installed above pollutant retentive material).
- 5.4 Retain and restore existing elements of the natural drainage system, including waterway, wetland and groundwater features, regimes and processes, and integrate these elements into the urban landscape, possibly through a multiple use corridor.
- 5.5 Minimise pollutant inputs through implementation of appropriate non-structural source controls (such as town planning controls, strategic planning controls, pollution prevention procedures, education and participation programs and regulatory controls) and structural controls (that manage the quantity and quality of stormwater runoff and prevent or treat stormwater pollution).
- 5.6 Enhance social amenity through multiple use corridors, lot landscaping and integrating water management measures into the landscape to enhance visual, recreational, cultural and ecological values.

Modified from Department of Water's *Stormwater Management Manual for Western Australia, 2004 - 2007*.

6 POLICY PROVISIONS

In determining or providing advice on strategic or statutory proposals, local government will have regard to the following when making planning decisions:

- 6.1 Land use change, subdivision and development will aim to achieve and maintain the relevant environmental criteria as set out in [Appendix 2](#);
- 6.2 Water sensitive urban design outcomes shall be achieved through compliance with the principles outlined in [Section 5](#) of this Policy, preferentially applied using an integrated approach, consistent with *Better Urban Water Management* (WAPC, 2008);
- 6.3 Application of this policy shall be practical and appropriate to the level of risk of the proposal. Guidance on level of risk is contained within [Appendix 3](#);



- 6.4 Planning and development proposals shall implement best practice water sensitive urban design, including but not limited to the strategies outlined in [Section 7](#) of this policy;
- 6.5 Water sensitive urban design practices prescribed in strategic planning instruments shall be linked to a planning mechanism that ensures implementation and requires performance monitoring; and
- 6.6 Appropriate investigations shall be performed and documented to support the assessment and approval of strategic plans, scheme amendments, structure plans, subdivision and development proposals, consistent with *Better Urban Water Management* (WAPC, 2008).

7 WATER SENSITIVE URBAN DESIGN STRATEGIES

Best practice water sensitive urban design, including but not limited to the following strategies, should be applied in planning and development proposals to achieve improved water management outcomes.

Additional information is contained within the accompanying Implementation Notes.

7.1 Compliance with environmental criteria

Strategic plans and planning proposals shall demonstrate compliance with relevant environmental criteria in [Appendix 2](#). Demonstration of compliance may be achieved through appropriate computer models, assessments and calculations appropriate to the stage of planning and scope of the proposal, as supported by the Department of Water. Further information is contained within *Better Urban Water Management* (WAPC, 2008).

7.2 Compliance with stormwater management policies

Stormwater management systems should comprise appropriate structural and non-structural best management practices applied using a treatment train approach, in compliance with the principles, objectives and guidelines in the *Stormwater Management Manual for Western Australia* (DoW, 2004 - 2007) and designed in accordance with the *Decision Process for Stormwater Management in WA* ([Appendix 4](#)).

7.3 Water conservation and reuse

Alternative sources of water and actions to minimise the use of potable water such as the reuse of rainwater and grey water in toilets, laundries and on gardens should be investigated as part of the planning and design process. A water balance should be completed for the plan area to guide identification of alternative sources of water. This should be considered in conjunction with proposed land uses to develop strategies for fit-for-purpose uses.

7.4 Water efficiency

When considering building applications, the [City/Town/Shire](#) shall have due regard to the implementation of methods to reduce the consumption of scheme water and

improve surface and groundwater management in new developments. These may include, but are not limited to:

- (a) All taps over basins having a 4 star or AAAA rating;
- (b) All showers having a 3 star or AAA rating;
- (c) All appliances having a 4 star or AAAAA rating; and
- (d) The inclusion of tap aerators, single lever mixer taps and volume control devices where possible.

All building applications should comply with these requirements and aim to increase efficiency levels where possible.

Under the 5 Star Plus Water Use in Houses Code all new homes must also ensure:

- a) 3 or 4 star rated water efficient fittings and fixtures are fitted; and
- b) all hot water outlets are located close to the hot water system or a recirculating hot water supply.

7.5 Stormwater infiltration

Where site conditions are suitable, the [City/Town/Shire](#) requires that infiltration devices such as soakwells, underground containment cells, pervious pavement and grassed or vegetated areas (infiltration basins and trenches), be used to manage stormwater runoff from frequent rainfall events from roofs, paved surfaces and other areas.

In small scale development, the [City/Town/Shire](#) requires that paved areas be:

- a) minimised;
- b) porous to allow stormwater infiltration; and
- c) contoured to direct stormwater runoff into landscaped areas rather than to the street drainage system;

7.6 Vegetated swales

Where possible, the [City/Town/Shire](#) requires that buffers and swales be incorporated into a treatment train to that swales meet the entrances of biofiltration systems or rain gardens, particularly in street scapes and non-active frontages. Swales should be used in conjunction with buffers which collect overland flow and provide pre-treatment prior to conveyance in the swale.

7.7 Rain Gardens and Biofiltration Systems

The [City/Town/Shire](#) requires the use of biofiltration systems to remove nutrients, sediment and heavy metals from stormwater. Biofiltration systems should be considered as part of an overall strategy for managing stormwater in a development and must address the following criteria:

- a) Biofiltration systems should be sized at approximately 2% of the directly connected, constructed impervious area to ensure satisfactory performance;
- b) The soil used must meet Australian Standard AS4419-2003 for Landscaping and Gardening;
- c) The filter media must have a hydraulic conductivity of 100-300mm/hr and meet the criteria set out in the Facility for Advancing Water

Biofiltration's Guidelines for Soil Filter Media in Bioretention Systems (FAWB, 2008);

- d) At least 50% of the plants used should be made up of *Carex* species, *Juncus* species, *Melaleuca* species and *Goodenia ovate*. The remainder of plants can be selected for biodiversity and aesthetic purposes, though thick rooted species are preferred;
- e) Plants should be planted at high densities, preferably angled at 45° to the direction of flow of water, to reduce weed invasion and decrease maintenance requirements.

7.8 Soil Amendment

Any proposal to subdivide or develop land on sandy or duplex soils should incorporate soil amendment in garden areas to maximise the phosphorus retention capability of the soil.

Any imported fill should have the capacity to reduce phosphorus export via soil leaching, whilst also meeting the [City/Town/Shire's](#) soil permeability and soil compaction criteria. Where the phosphorous retention index is insufficient, the fill should be amended.

7.9 Connection to sewer and effluent disposal

A connection to reticulated sewerage is required as part of any proposal to develop land for residential, special residential, commercial, industrial or tourist uses where the land has a maximum groundwater level of less than 1.2m below the natural ground surface or where subsoil drainage is proposed or will be required as a part of subdivision or development.

Where access to a reticulated sewerage system is not available and the conditions are not consistent with those outlined above, on-site effluent disposal facilities are to be provided to treat and dispose of any domestic effluent. Soil permeability, nutrient retention characteristics and slope must be demonstrated to be appropriate for the proposed system.

No effluent disposal facility (including any leach drain or soak well) is to be located:

- (e) within 6m of any open drainage channel or subsoil drain; or
- (f) within 30 metres of the outer edge of an intermittent water course; or
- (g) within 50 metres of the outer edge of a permanent water course in the case of a nutrient removal system or within 100 metres for a conventional septic system; or
- (h) within 100 metres of any protected wetland, or within such greater distance as may be required to achieve a minimum one metre vertical separation between the natural ground level at that distance and the natural ground level of the adjacent wetland vegetation; or
- (i) within 100 metres of a bore or underground water source used for human consumption, unless otherwise approved by the [City/Town/Shire](#).

The [City/Town/Shire](#) may require additional setbacks for effluent disposal facilities and/or require the installation of specific types of facilities (including those involving the removal of nutrients) where it considers such requirements appropriate or necessary for the protection of water resources or other environmental values.

7.10 Retention of Bushland

All proposals shall maximise retention of bushland and trees, particularly where regionally or heritage significant. Proposals for “vegetation banking”, or “environmental offsets” consistent with the principles and practices set out in the *EPA Position Statement No. 9 (Environmental Offsets)* 2006 will also be considered.

7.11 Landscaping Techniques

The [City/Town/Shire](#) requires the following landscaping techniques to be applied to new residential, commercial, industrial and rural residential developments:

- a) application of soil improvement certified to Australian Standard AS4454 (to a minimum depth of 150mm where lawn is planted and minimum depth of 300mm for garden beds);
- b) use of native species with low nutrient and water requirements;
- c) waterwise garden design including a balanced mix of hard stand, garden beds and lawn, preferably planted in hydrozones to reduce irrigation requirements;
- d) garden beds that are mulched to 75mm with a product certified to Australian Standard AS4454 to reduce surface evaporation and improve the moisture holding capacity of the soil;
- e) use of turf species endorsed by the UWA Turf Industries Research Steering Committee;
- f) irrigation systems that meet the Irrigation Association of Australia Standards including “smart” irrigation systems; and
- g) where possible, the use of vegetated filter strips and contour banks as part of an overall strategy to reduce stormwater velocities, filter pollutants and promote infiltration in and around the development.

7.12 Construction and Building Site Management

Actions must be proposed to address management of construction activities, particularly litter and sediment management as well as vegetation and tree protection. Construction and operational activities on landholdings within the policy area should be consistent with an approved Construction and Building Site Management Plan. The plan must be submitted and approved prior to the commencement of site works.

7.13 Management of Acid Sulfate Soils

Acid sulfate soils should not be disturbed or allowed to oxidise as a result of dewatering or drainage throughout development. An assessment for acid sulfate soils is to be undertaken prior to development consistent with the Department of Environment and Conservation’s acid sulphate soils guideline series.

7.14 Compliance Measures

To ensure that water management systems will perform as indicated and are constructed in accordance with design plans, the [City/Town/Shire](#) will:

- a) only accept water management system designs from qualified engineers; and

- b) require the designer to certify that the completed water management system will perform as designed.

To ensure the ongoing management and maintenance of water systems on private land, the [City/Town/Shire](#) may require a covenant and a restriction of use on land to be placed on the property title and a formal agreement established that:

- a) Identifies roles and responsibilities for management of the system including accountability measures if system failure occurs;
- b) Enforces regular inspections and maintenance to be carried out;
- c) Requires regular reporting to Council on the ongoing operation of the system, including performance reporting; and
- d) Requires the education of new landholders about their maintenance and reporting requirements if a change of title occurs.

8 IMPLEMENTATION

Implementation of this Local Planning Policy should be consistent with *Better Urban Water Management* (WAPC, 2008).

8.1 Application Requirements

Any application for Council's planning consent shall meet all requirements set out in Schedule No [XX](#) of the [City/Town/Shire](#) of [XXX](#)'s Town Planning Scheme No [XX](#), and have due regard for the requirements in *Better Urban Water Management* (WAPC, 2008).

8.2 Assessment Criteria

In assessing any application within the local government area specified in Appendix 1, the [City/Town/Shire](#) of [XX](#) shall have regard to the provisions of this policy ([Section 6](#)), as well as the requirements outlined in *Better Urban Water Management* (WAPC, 2008).

Application of this Policy shall be based on the following principles.

- Informed decision-making – land use planning decision-making should be based on an appropriate level of information;
- Relevance – only issues that are relevant to the site require investigation and discussion, recognising that the planning process may not occur in an orderly fashion and that a practical approach should be applied where regional/district-level information is lacking, particularly in areas of development pressure; and
- Risk management – relevant issues should be investigated at a scale consistent with land use planning decision making and to an extent that addresses the level of risk to the community and environment.

9 FURTHER INFORMATION

Further information may be obtained from the following resources:

- *Environmental Protection (Swan Canning Rivers) Policy* (1998)

- *Stormwater Management Manual for Western Australia, 2004 – 2007*
- *State Planning Policy 2.9: Water Resources (2006)*
- *State Planning Policy 2.10: Swan Canning River System (2006)*
- *Better Urban Water Management (WAPC, 2008)*
- *Planning Bulletin 92: Urban Water Management (WAPC, 2008)*
- *Liveable Neighbourhoods (WAPC, 2007)*
- *State Planning Policy 2.7: Public Drinking Water Source (2003)*



APPENDIX 1 – POLICY AREA

Local Government to generate map of policy application area. Could be whole LGA or part of the LGA within Swan-Canning Catchment



APPENDIX 2: ENVIRONMENTAL CRITERIA

The Environmental Criteria for the protection of environmental values (including beneficial uses) within the Policy Area are those set out as principles, objectives, parameters, targets, standards and criteria in the following documents, and any amendments thereto:

- 1) Any published Water Quality Improvement Plan (which may also be transcribed into Council's Local Planning Strategy).
- 2) A Drainage and Water Management Plan released by the Department of Water that is and applicable to the subject land.
- 3) A District Water Management Strategy prepared and applicable to the subject land that is endorsed by the Department of Water as consistent with the Framework.
- 4) A Local Water Management Strategy prepared and applicable to the subject land that is endorsed by the Department of Water.
- 5) An Urban Water Management Plan prepared and applicable to the subject land that is endorsed by the relevant Local Government.
- 6) The interim environmental quality criteria set out below.

Interim Environmental Criteria

The following interim environmental criteria are proposed to be used as a guide for development of the urban water management system for strategic planning, subdivision and development until finalisation of the Swan Canning WQIP. Demonstration of compliance with these design objectives may be through appropriate computer modeling or other assessment methods acceptable to the DoW.

Water Conservation – potable and wastewater

Principle

No potable water should be used outside of homes and buildings with use of this standard of water to be as efficient as possible.

Design objectives

Consumption target for water of 100 kL/person/yr, (*State water plan target*) including not more than 40-60 kL/person/yr scheme water.

Water quantity management

Principle

Post-development annual discharge volume and peak flow be maintained relative to pre-development conditions, unless otherwise established through determination of ecological water requirements for sensitive environments.

Criteria

Ecological Protection - For the critical one year average recurrence interval (ARI) event, the post-development discharge volume and peak flow rates shall be



maintained relative to pre-development conditions in all parts of the catchment. Where there are identified impacts on significant ecosystems, maintain or restore desirable environmental flows and/or hydrological cycles as specified by DoW.

Flood Management - Manage the catchment run-off for up to the 1 in 100 year ARI event in the development area to pre-development peak flows, unless otherwise indicated in an approved strategy or as negotiated with the relevant drainage service provider.

Water quality management

Principle

Maintain surface and ground water quality at pre-development levels (winter concentrations) and, if possible, improve the quality of water leaving the development area to maintain and restore ecological systems in the sub-catchment in which the development is located.

Criteria

Contaminated sites - To be managed in accordance with the *Contaminated Sites Act 2003*.

All other land - If the pollutant outputs of development (measured or modelled concentrations) exceed catchment ambient conditions, the proponent shall achieve water quality improvements in the development area or, alternatively, arrange equivalent water quality improvement offsets inside the catchment. If these conditions have not been determined, the development should meet relevant water quality guidelines stipulated in the *National Water Quality Management Strategy* (ARMCANZ and ANZECC, 2000).

Drainage - Ensure that all run-off contained in the drainage infrastructure network receives treatment prior to discharge to a receiving environment consistent with the *Stormwater Management Manual*. In addition, all outflows from subsoils should receive treatment prior to discharge to the stormwater system.

Stormwater modelling criteria

If it is proposed to use a computer stormwater modelling tool to demonstrate compliance with design objectives, the following design modelling parameters are recommended.

As compared to a development that does not actively manage stormwater quality:

- At least 80 per cent reduction of total suspended solids
- At least 60 per cent reduction of total phosphorus
- At least 45 per cent reduction of total nitrogen
- At least 70 per cent reduction of gross pollutants

Disease vector and nuisance insect management

To reduce health risks from mosquitoes, retention and detention treatments should be designed to ensure that between the months of November and May, detained immobile stormwater is fully infiltrated in a time period not exceeding 96 hours.

Permanent water bodies are discouraged, but where accepted by DoW, must be designed to maximise predation of mosquito larvae by native fauna to the satisfaction of the local government on advice of the Departments of Water and Health.



APPENDIX 3: RISK CLASSIFICATION FOR SUBDIVISION AND DEVELOPMENT

RISK CLASSIFICATION FOR SUBDIVISION AND DEVELOPMENT		
Risk Level	Subdivision	Development
Low –	<p>Good depth to groundwater. Can accommodate all on site infiltration, with no significant water dependent ecosystems, and no offsite discharge or regional drainage issues</p> <p>Low-medium density residential subdivision creating less than four lots.</p> <p>Commercial, Industrial, or Rural Residential subdivision applications that create no more than 5 lots.</p>	<p>Residential development connected to deep sewerage</p> <p>Commercial or industrial use connected to deep sewerage or licensed under Part V of the <i>Environmental Protection Act.</i>"</p>
Medium	<p>Offsite discharge is required to a local &/or regional drainage system and there are low environmental risks</p> <p>Medium acid sulfate soils risk</p> <p>Low-medium density residential subdivision creating four to 20 lots and less than 20ha.</p> <p>Commercial, Industrial, or Rural Residential subdivision applications that create no more than 15 lots.</p>	<p>Residential, commercial and industrial development not connected to deep sewerage</p>
High –	<p>Any proposal on land where two or more of the following apply:</p> <ul style="list-style-type: none"> o maximum groundwater level is less than 1.2 metres below the natural ground surface; o Any proposed off-site drainage could lead to degradation of wetlands or waterways. o Contains a floodplain o High acid sulfate soils risk o Contains any part of a Conservation Category wetland or its buffer o Phosphorus input is likely to exceed the 17kg/ha/pa. o Nitrogen input is likely to exceed 150kg/ha/pa. 	<p>Any proposal on land where two or more of the following apply:</p> <ul style="list-style-type: none"> o maximum groundwater level is less than 1.2 metres below the natural ground surface; o Any proposed off-site drainage could lead to degradation of wetlands or waterways. o Contains a floodplain o High acid sulfate soils risk o Contains any part of a Conservation Category wetland or its buffer o Phosphorus input is likely to exceed 15kg/ha/pa. o Nitrogen input is likely to exceed 150kg/ha/pa.

APPENDIX 4 – DECISION PROCESS FOR STORMWATER MANAGEMENT IN WA

