

22.0 WATER SENSITIVE URBAN DESIGN

22.1 POLICY OBJECTIVES

- 22.1.1 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);
- 22.1.2 To achieve better integration of land and water planning which results in improved water management outcomes for the Peel-Harvey catchment; and
- 22.1.3 To ensure that land use planning decisions are compatible with achievement of the objectives and maintenance of the Environmental Quality Criteria in the *Environmental Protection (Peel Inlet - Harvey Estuary) Policy 1992*, the Ministerial Conditions imposed in Bulletin 994 "*Peel Region Scheme*" and the Peel-Harvey Coastal Catchment Water Quality Improvement Plan (EPA, in preparation).

22.2 POLICY PURPOSE

This policy aims to protect the environmental values of the Peel - Harvey Catchment area by providing reference to:

- 22.2.1 A framework for the application of Water Sensitive Urban Design (WSUD) management practices at each stage of the planning process, consistent with State Planning Policy 2.9: Water Resources (2006);
- 22.2.2 Water quality, quantity and efficiency targets and design objectives for strategic planning, subdivision and development;
- 22.2.3 Guidance on investigations and information required to support strategic planning exercises and statutory planning proposals; and
- 22.2.4 Advice on mechanisms to aid achievement and maintenance of the environmental quality objectives in the Environmental Protection (Peel Inlet - Harvey Estuary) Policy 1992, the Peel-Harvey Coastal Catchment Water Quality Improvement Plan (EPA, in preparation) and the interim design objectives in Appendix 1.

22.3 APPLICATION

This policy applies to strategic and statutory proposals¹ that facilitate residential, commercial, industrial or rural-residential zoning, subdivision or development. As such, 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 Peel-Harvey Coastal Catchment area of the Shire of Waroona.

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

22.4 INTERPRETATION

For the purpose of interpreting this policy, all terms shall have the meaning given under the provisions of Council's Town Planning Scheme No 7. In addition, the following definitions apply.

Average Annual Maximum Groundwater Level (AAMGL) - currently being phased out by the Department of Water as a measure of depth to groundwater in favour of the Controlled Groundwater Level. However, the reference retains significance on account of its inclusion in the environmental conditions applied to the Peel Region Scheme in the Minister for Environment's Environmental Statement No. 000601 of 2 August 2002.

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 (CGL)- The controlled (ie modified) groundwater level at which drainage inverts are set (measured in metres from the Australian Height Datum).

Environmental Quality Objective – Water quality, quantity, conservation and management objectives, which form the basis for the design and management of land uses and developments.

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.

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.

Urban Water Management Plan – document prepared to address water management issues to accompany an application for subdivision or in response to a condition of subdivision or condition of development approval.



Water Quality Objective - Quantitative physical, biological or chemical water quality measurements which if achieved are likely to prevent the loss or degradation of an Environmental Value. Water Quality Objectives are likely to be replaced by Environmental Quality Criteria.

22.5 POLICY PROVISIONS

In determining or providing advice on strategic or statutory proposals, planning decision-making by local government will have regard to the following provisions.

- 22.5.1 Land use scenarios described in strategic planning instruments should aim to achieve and maintain the relevant Environmental Quality Criteria as set out in Appendix 1;
- 22.5.2 WSUD outcomes should be achieved through compliance with the principles addressed in Section 6 of this Policy, preferentially applied using an integrated approach, consistent with the Peel-Harvey Coastal Catchment WSUD Technical Guidelines, prepared for the Peel Development Commission (October 2006);
- 22.5.3 Application of this policy should be practical and appropriate to the level of risk of the proposal. (Guidance on level of risk is contained within Appendix 2);
- 22.5.4 Planning and development proposals should implement the WSUD strategies outlined in Section 7 of this policy;
- 22.5.5 WSUD practices prescribed in strategic planning instruments should be linked to a planning mechanism that ensures implementation and requires performance monitoring; and
- 22.5.6 Appropriate investigations should be performed and documented to support the assessment and approval of strategic plans, scheme amendments, structure plans, subdivision and development proposals, consistent with the recommendations in the Peel-Harvey Coastal Catchment WSUD Technical Guidelines, prepared for the Peel Development Commission (October 2006).

22.6 WSUD PRINCIPLES

WSUD principles should be applied when undertaking strategic and statutory planning within the Shire of Waroona. These principles, in order of priority, are as follows.

- 22.6.1 Provide protection to life and property from flooding that would occur in a 100 year Average Recurrence Interval (ARI) flood event.
- 22.6.2 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).
- 22.6.3 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.
- 22.6.4 Maximise water use efficiency, reduce potable water demand, and maximise the re-use of water harvested.



- 22.6.5 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).

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

22.7 WSUD STRATEGIES

The following strategies should be applied in planning and development proposals to achieve improved water management within the Peel-Harvey catchment. Further information regarding their implementation is provided in the *Peel-Harvey Coastal Catchment WSUD Technical Guidelines*, prepared for the Peel Development Commission (October 2006).

22.7.1 **Compliance with environmental quality criteria**

Strategic plans and proposals should demonstrate compliance with relevant environmental quality criteria as outlined in Appendix 1. 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 DoW. Further information is contained within the *Peel-Harvey Coastal Catchment WSUD Technical Guidelines*, prepared for the Peel Development Commission (October 2006).

22.7.2 **Compliance with stormwater management policies**

Stormwater management systems shall comply with the principles, objectives and guidelines in the Stormwater Management Manual for Western Australia (DoW, 2004) and be designed in accordance with the Decision Process for Stormwater Management in WA (Appendix 3).

22.7.3 **Application of WSUD treatment trains**

All plans and proposals should incorporate appropriate structural and non-structural practices to improve water management outcomes. Best management practices should be applied using a treatment train approach, consistent with recommendations in the *Peel-Harvey Coastal Catchment WSUD Technical Guidelines*, prepared for the Peel Development Commission (October 2006).

22.7.4 **Preparation of water management strategies**

The Environmental Conditions placed on the Peel Region Scheme by the Minister for the Environment require preparation of a Drainage, Nutrient & Water Management Plan for land where "the annual maximum groundwater level is less than 1.2 metres below the natural ground surface, or where any proposed off-site drainage could lead to degradation of wetlands or waterways". Proposals will be considered to meet the requirements of the Ministerial Condition where they are supported by an appropriate water management plan, consistent with the framework in section 8 of the Model WSUD Local Planning Policy contained within the *Peel-Harvey Coastal Catchment WSUD Technical Guidelines*, prepared for the Peel Development Commission (October 2006).



22.7.5 **Soil Amendment**

Any proposal to subdivide or develop land on sandy or duplex soils where the annual maximum groundwater level is less than 1.2 metres below natural ground level should incorporate soil amendment to maximise the phosphorus retention capability of the soil. This should be undertaken in accordance with the *Peel-Harvey Coastal Catchment WSUD Technical Guidelines*, prepared for the Peel Development Commission (October 2006).

22.7.6 **Total Phosphorus and Total Nitrogen Import and Export Criteria**

Any subdivision or development likely to result in a nutrient input rate above the current average estimated rates of 15kg/phosphorus/ha per annum or 150kg/nitrogen/ha per annum are considered environmentally unacceptable and shall be referred to the EPA unless appropriate and acceptable information is provided to demonstrate that the subdivision or development will achieve the relevant Environmental Quality Objective (Appendix 1).

22.7.7 **Minimum % Area of Deep Rooted Perennial Vegetation**

All proposals should aim to maintain at least 20% of the proposal area with deep rooted perennial vegetation. This may require re-vegetation work to be undertaken by the land owner if there is insufficient remnant vegetation on site to meet this requirement. Proposals for “vegetation banking”, or “environmental offsets” consistent with the principles and practices set out in the EPA Position Statement No. 9 (Environmental Offsets) 2005 will also be considered.

22.7.8 **Building and Landscaping Guidelines**

Local Structure Plans for new subdivision estates should include Building and Landscaping Guidelines. The guidelines should also apply to land ceded to Council.

The Building and Landscaping Design Guidelines should substantively consider and discuss, individually and in an integrated fashion, incorporation of the following elements, consistent with the *Peel-Harvey Coastal Catchment WSUD Technical Guidelines*, prepared for the Peel Development Commission (October 2006):

- Installation of soakwells during construction of any dwelling or ancillary outbuilding;
- Amendment of soil beneath lawn and landscaped areas to maximise the capture of phosphorus;
- Runoff from driveways and paved surfaces being diverted to lawn and gardens to prevent the discharge of surface runoff beyond the allotment boundary;
- Use of drought-tolerant and low nutrient-demand landscaping (xeriscaping), including minimised use of lawn, within open space areas and the front setback area with Waterwise irrigation;
- Installation of rainwater tanks with a plumbed connection to toilets and laundry outlets, with overflow directed to soakwells or garden infiltration beds; and
- Installation of Waterwise fittings and appliances

22.7.9 **Construction and Building Site Management**

Construction and Operational activities on landholdings within the policy area should be consistent with an approved Construction and Building Site Management Plan. The plan should be submitted and approved prior to the start of site works.

The plan should be consistent with the Greensmart - Cleansite Site Management Guidelines being jointly developed and implemented by the Department of Water, Housing Industry Association, and Urban Development Institute of Australia (WA).



22.8 IMPLEMENTATION

Implementation of this Local Planning Policy should be consistent with the *Peel-Harvey Coastal Catchment Water Sensitive Urban Design Technical Guidelines* prepared for the Peel Development Commission (October 2006), and Department of Water (DoW) 'Urban Water Management Plans - Guidelines for Preparation and Compliance with Subdivision Conditions (February 2008)'.

22.8.1 Application Requirements

Any application for Council's planning consent shall meet all requirements set out in the Shire of Waroona Town Planning Scheme No 7, and have due regard for the requirements in Section 8 of the Peel Harvey WSUD Local Planning Policy (Peel Development Commission, 2006).

22.8.2 Assessment Criteria

In assessing any application within the Peel-Harvey Coastal Catchment, the Shire of Waroona shall have regard to the provisions of this policy (Section 5), the requirements outlined in Section 8 of the Peel-Harvey WSUD Local Planning Policy (Peel Development Commission, 2006), the Urban Water Management Plans – Guidelines for Preparation and Compliance with Subdivision Conditions (Department of Water, February 2008) and the Peel-Harvey Coastal Catchment Water Sensitive Urban Design Technical Guidelines (Peel Development Commission, October 2006).

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Amendments:



APPENDIX 1: Environmental Quality Criteria

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

- 1) The Peel-Harvey Water Quality Improvement Plan (which may in time also be transcribed into Council's Local Planning Strategy).
- 2) A District Water Management Strategy prepared and applicable to the subject land that is endorsed by the Department of Water as consistent with the documents detailed in Section 1.2 of this policy.
- 3) A Local Water Management Strategy prepared and applicable to the subject land that is endorsed by the Department of Water as consistent with the documents listed in Section 1.2 of this policy.
- 4) An Urban Water Management Plan prepared and applicable to the subject land that is endorsed by the relevant Local Government as consistent with the documents detailed in Section 1.2 of this policy.
- 5) The interim environmental quality criteria set out in Appendix 1 of this policy.

In the event of any deficiency or inconsistency arising between the parameters, standards or criteria set out above shall be applied in the following order:

- a) In the first instance an applicable District Water Management Strategy endorsed by the Department of Water;
- b) An applicable Local Water Management Strategy endorsed by the Department of Water.
- c) The Peel-Harvey Water Quality Improvement Plan.
- d) The interim environmental quality criteria set out in Appendix 2 below.
- e)

Interim Environmental Quality 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 Peel-Harvey WQIP. Demonstration of compliance with these design objectives may be through appropriate computer modeling or other assessment methods acceptable to the Department of Water.



WATER CONSERVATION – POTABLE & WASTEWATER

Principle:

No potable water should be used outside of homes and buildings

Design Objectives:

Consumption target for potable water of 40-60kL/person/yr

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 1 in 1 year 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 hydroperiods as specified by the DoW.

Flood Management - Manage the peak flows and discharge volume to the receiving water body (waterway / wetland/ groundwater or coastal marine area), for the 100yr ARI major event and the minor ARI design flood event as required in the relevant Water Management Strategy.

If an approved Water Management Strategy covering the development area has not been prepared, peak flows and discharge volumes should be maintained at pre-development levels.

WATER QUALITY MANAGEMENT

Principle

Maintain surface and ground water quality at pre-development levels (median 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 median concentrations) exceed catchment ambient conditions, the proponent shall achieve water quality improvements within the development area or, alternatively, arrange equivalent water quality improvement offsets within the catchment. If catchment ambient conditions have not been determined, the development should meet relevant water quality guidelines stipulated in the *National Water Quality Management Strategy* (ARMCANZ & ANZECC, 2000).



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% reduction of total suspended solids
- At least 60% reduction of total phosphorus
- At least 45% reduction of total nitrogen
- At least 70% reduction of gross pollutants

DISEASE VECTOR AND NUISANCE INSECT MANAGEMENT

To reduce health risk 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 within a time period not exceeding 96 hours.

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

APPENDIX 2 - RISK CLASSIFICATION FOR SUBDIVISION AND DEVELOPMENT

RISK CLASSIFICATION FOR SUBDIVISION AND DEVELOPMENT		
Risk Level	Subdivision	Development
Low –	<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 three lots.</p>	<p>Residential development connected to a reticulated sewer system.</p> <p>Commercial or industrial use connected to deep sewerage or licenced under Part V of the <i>Environmental Protection Act</i>.</p>
Medium	<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>Moderate to low risk of acid sulphate soils</p>	<p>Residential, commercial or industrial development not connected to a reticulated sewer system.</p>
High –	<p>Any proposal on land where two or more of the following apply:</p> <ul style="list-style-type: none"> ○ annual maximum groundwater level is less than 1.2 metres below the natural ground surface; ○ Any proposed off-site drainage could lead to degradation of wetlands or waterways. ○ Phosphorus input is likely to exceed the 15kg/ha/pa. ○ Nitrogen input is likely to exceed 150kg/ha/pa. ○ High risk of acid sulphate soils. 	<p>Any proposal on land where two or more of the following apply:</p> <ul style="list-style-type: none"> ○ annual maximum groundwater level is less than 1.2 metres below the natural ground surface; ○ Any proposed off-site drainage could lead to degradation of wetlands or waterways. ○ Phosphorus input is likely to exceed 15kg/ha/pa. ○ Nitrogen input is likely to exceed 150kg/ha/pa. ○ High risk of acid sulphate soils.

APPENDIX 3 - Decision Process for Stormwater Management in WA

See Appendix 4 Peel-Harvey Coastal Catchment Water Sensitive Urban Design Technical Guidelines (October 2006).

