PEEL-HARVEY WSUD LOCAL PLANNING POLICY

Final

A model local planning policy to assist Local Government to determine strategic and statutory proposals within the EPP Policy Area of the Peel-Harvey Coastal Catchment.

Delivered through the Federal Government’s Coastal Catchment Initiative

October 2006
Note:
This draft document has no legal standing and is being developed for Local Governments in the Peel-Harvey estuary coastal catchment. Local Governments will have the option of adopting their own customised version of the model policy. Any such policy would have to be advertised for public comment in accordance with the statutory requirements of their planning scheme.
CONTENTS

1 Introduction ..................................................................................................................1
  1.1 Background..............................................................................................................1
  1.2 Statutory and Policy Basis .......................................................................................4

2 Purpose of Policy ...........................................................................................................4

3 Application of Policy .....................................................................................................5

4 Policy Objectives ............................................................................................................5

5 Policy provisions ............................................................................................................5

6 Water Sensitive Urban Design Principles ......................................................................6

7 WSUD Strategies ............................................................................................................6
  7.1 Compliance with environmental quality criteria ....................................................6
  7.2 Compliance with stormwater management policies ..............................................7
  7.3 Application of WSUD treatment trains .................................................................7
  7.4 Preparation of water management strategies .........................................................7
  7.5 Soil Amendment ......................................................................................................7
  7.6 Total Phosphorus and Total Nitrogen Import and Export Criteria .......................7
  7.7 Minimum % Area of Deep Rooted Perennial Vegetation ........................................7
  7.8 Building and Landscaping Covenants .....................................................................8
  7.9 Construction and Building Site Management .........................................................8

8 Implementation of Policy ...............................................................................................9
  8.1 Stage 1: Regional planning .......................................................................................9
  8.2 Stage 2: District planning .........................................................................................11
      8.2.1 Local Planning Strategy ..................................................................................11
      8.2.2 District structure planning/ Region Scheme Amendment ..................................12
  8.3 Stage 3: Local planning .........................................................................................13
      8.3.1 Town Planning Scheme Amendment ............................................................13
      8.3.2 Local Structure Planning ..............................................................................14
  8.4 Stage 4: Subdivision ...............................................................................................16
  8.5 Stage 5: Development .............................................................................................17

9 Interpretations ................................................................................................................18

Figures
  Figure 1: Peel-Harvey reporting WQIP catchments ......................................................2
  Figure 2: Enlargement of river sub-catchments adjacent to estuary .............................3
  Figure 3: Proposed Framework for Implementing WQIP ..........................................10

Appendices
  Appendix 1 - Environmental Quality Criteria ............................................................21
  Appendix 2 – Policy Area .............................................................................................25
  Appendix 3 - Risk Classification for Subdivision and Development ............................26
  Appendix 4 - Decision Process for Stormwater Management In WA .........................27
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1 INTRODUCTION

This policy provides a planning framework for Local Government, which aims to integrate catchment management objectives as set out in the Peel-Harvey Water Quality Improvement Plan (WQIP) into Local Government strategic planning and statutory decision making. The framework will assist the integration of land and water resource planning in urban landscapes, through the implementation of Water Sensitive Urban Design (WSUD) principles and practices.

The policy identifies broad policy objectives against which strategic and statutory proposals can be assessed. It will be supported by the Peel-Harvey WSUD Technical Guidelines which will provide more detail on design details, implementation methodologies and assessment tools.

This policy has been endorsed by the Environmental Protection Authority (EPA) as an interim tool to assist Local Government to achieve land use planning outcomes consistent with the objectives of the Environmental Protection (Peel Inlet - Harvey Estuary) Policy 1992 (Peel-Harvey EPP) and the Peel-Harvey WQIP.

It is envisaged that each Local Government will customise this Model policy to suit its own requirements, however it is expected that key areas, such as the objectives, principles and implementation framework, including implementation of the WQIP, will be retained.

1.1 Background

The Peel-Harvey WQIP has been prepared by the EPA to aid improvement of the water quality of the Peel-Harvey estuarine system. It will also increase the practicality of integrating land use and catchment planning. The WQIP maps 216 river subcatchments within the Peel-Harvey coastal catchment (Figure 1 and 2) and identifies individual concentration-based water quality objectives for 17 of these catchments.

The WQIP groups the river subcatchments into 17 Reporting Catchments and sets load based water quality objectives for each. Progress towards compliance with these load based targets will be monitored using automated systems, mostly via Load Monitoring Units (LMU’s), installed at the bottom of each subcatchment or as appropriate, and maintained by the Department of Environment and Conservation (DEC).

The DEC has developed a water quality and hydrological model for the Peel-Harvey Coastal Catchment area, known as LASCAM. This model has been used as the basis for a Decision Support System (DSS) which is able to estimate the likely water quality outcome of different broadscale land use scenarios proposed within a river subcatchment. This tool will be used by the DoE to inform strategic land use planning activities within the Peel-Harvey coastal catchment.
Figure 1: Peel-Harvey reporting WQIP catchments
Enlargement of River Subcatchments adjacent to the estuary

Figure 2: Enlargement of river sub-catchments adjacent to estuary
An interagency agreement is also in development to establish a framework for cooperation between several decision making authorities. The agreement aims to ensure that future planning decisions within the catchment are made with due consideration of the potential water quality impacts from land use change or development. An integral facet in managing potential water quality impacts is the incorporation of WSUD into the land use planning and development approvals system.

A set of design objectives have been established to guide estate planning (via local structure plans) and subdivision design (Appendix 1). Compliance with these design objectives should be demonstrated at these design stages to aid achievement of WQIP objectives.

1.2 Statutory and Policy Basis
This policy is consistent with and supported by the following environmental and planning instruments:

- Environmental Protection (Peel Inlet - Harvey Estuary) Policy 1992;
- Peel-Harvey Water Quality Improvement Plan (EPA, in prep);
- Statement of Planning Policy No 2: Environmental and Natural Resources Policy 2003;
- Statement of Planning Policy No 2.1: Peel-Harvey Coastal Plain Catchment 1992; and

2 PURPOSE OF POLICY
This policy aims to protect the environmental values of the Peel Inlet Harvey Estuary Catchment area by providing:

- A framework for the application of WSUD management practices at each stage of the planning process;
- Water quality, quantity and efficiency targets and design objectives for strategic planning, subdivision and development;
- Guidance on investigations and information required to support strategic planning exercises and statutory planning proposals; and
- Advice on mechanisms to aid achievement and maintenance of the environmental quality objectives in the Peel-Harvey EPP, the Peel-Harvey WQIP and the interim design objectives in Appendix 1.
3 APPLICATION OF POLICY

This policy applies to strategic and statutory proposals\(^1\) 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 Policy Area depicted in Appendix 2.

4 POLICY OBJECTIVES

The objectives of this Policy are to:

4.1 Achieve better integration of land and water planning which results in improved water management outcomes for the Peel-Harvey catchment; and

4.2 Ensure that land use planning decisions are compatible with achievement of the objectives and maintenance of the Environmental Quality Criteria in the Peel-Harvey EPP, the Ministerial Conditions imposed in Bulletin 994 “Peel Region Scheme” and the Peel-Harvey WQIP.

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.

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;

5.2 WSUD outcomes should be achieved through compliance with the principles in Section 6 of this Policy, preferentially applied using an integrated approach, consistent with the Peel-Harvey WSUD Technical Guidelines;

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 3);

5.4 Planning and development proposals should implement the WSUD strategies outlined in Section 7 of this policy;

5.5 WSUD practices prescribed in strategic planning instruments should be linked to a planning mechanism that ensures implementation and requires performance monitoring; and

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\(^1\) 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
5.6 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 Section 8.

6 WATER SENSITIVE URBAN DESIGN PRINCIPLES

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

6.1. Provide protection to life and property from flooding that would occur in a 100 year Average Recurrence Interval (ARI) flood event.

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).

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.

6.4. Maximise water use efficiency, reduce potable water demand, and maximise the re-use of water harvested.

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 Stormwater Management Manual for Western Australia, 2004 - current.

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 WSUD Technical Guidelines.

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 DEC.
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 (Dept of Water, 2004) and be designed in accordance with the Decision Process for Stormwater Management in WA (Appendix 4).

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 (BMP) should be applied using a treatment train approach, consistent with recommendations in the Peel-Harvey WSUD Technical Guidelines.

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 that are supported by an appropriate water management plan, consistent with the framework in Section 8 of this policy, will be considered to meet the requirements of the Ministerial Condition.

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 WSUD Technical Guidelines.

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).

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.
7.8 Building and Landscaping Covenants

Local Structure Plans for new subdivision estates should include Building and Landscaping Guidelines, together with a commitment to place and enforce covenants on the titles of all new allotments to ensure the implementation of those 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 WSUD Technical Guidelines:

- 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

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 DoE, Housing Industry Association, and Urban Development Institute of Australia (WA).
8 IMPLEMENTATION OF POLICY

This policy proposes a planning framework to achieve integrated land and water planning. The implementation framework, depicted in Table 1 and Figure 3, is consistent with (and will facilitate the implementation of) Statement of Planning Policy 2.1: Peel-Harvey Coastal Plain Catchment 1992, and the draft Statement of Planning Policy No. 2.9: Water Resources (WAPC, 2004).

<table>
<thead>
<tr>
<th>Planning stage/ scale</th>
<th>Planning action</th>
<th>Water Management Plan²</th>
<th>Likely responsibility for water planning</th>
<th>Indicative area of coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Regional</td>
<td>Regional Strategy Region Scheme Regional Structure Plan</td>
<td>Regional water management strategy</td>
<td>State Government</td>
<td>&gt;1 LGA</td>
</tr>
<tr>
<td>2 District</td>
<td>Local Planning Strategy Region Scheme Amendment District Structure Plan Local Planning Scheme</td>
<td>District Water Management Strategy</td>
<td>State Government/ Local Government</td>
<td>Generally &gt; 300ha, may be &gt; 1LGA</td>
</tr>
<tr>
<td>3 Local</td>
<td>Local Planning Scheme Amendment Local Structure Plan Outline Development Plan</td>
<td>Local Water Management Strategy</td>
<td>Local Government / Land owner</td>
<td>&lt; 300ha</td>
</tr>
<tr>
<td>4 Subdivision</td>
<td>Subdivision Application with conditions Detailed Area Plan</td>
<td>Urban Water Management Plan</td>
<td>Land owner</td>
<td>Large &gt; 20ha Small &lt; 20ha</td>
</tr>
<tr>
<td>5 Development</td>
<td>Development application Building licence</td>
<td>Design covenant</td>
<td>Land owner</td>
<td>Lot</td>
</tr>
</tbody>
</table>

Table 1: Stages of planning and water management plans

Actions taken to achieve the objectives of this policy should be appropriate to the stage and scale of planning being undertaken. The actions recommended for the various stages of planning are as follows.

8.1 Stage 1: Regional planning

This stage of planning is usually undertaken by State Government. Accordingly, this stage of planning will be guided by the policies and practices of State Government, particularly the Western Australian Planning Commission and the Department for Planning and Infrastructure.

² Note: All water management plans are considered to meet the requirements of the Drainage, Nutrient and Water Management Plan referred to in the Ministerial Conditions for the Peel Region Scheme (Statement no 601, Aug 2002).
Stage 1: Regional Structure Plan/Strategy – supported by Regional Water Management Strategy
- Principles from Water Resources SPP, Stormwater Management Manual
- Objectives & Targets
- Identify water resource needs of environment and future development including potable and non-drinking water sources
- Strategic drainage plan
- Areas for future work

Stage 2: District Structure Plan, Region Scheme supported by District Water Management Strategy
- Commit to best practice planning, design & construction (discuss conceptual Best Panning Practices & Best Management Practices)
- Refine land use scenario & identify major constraints
- Identify water sources for drinking and other uses, consistent with fit-for-purpose use
- Refine water quantity management strategy including land for flood protection
- Identify issues to be addressed at later stages

Stage 3: TPS Amendment & Local Structure Plan including Local Water Management Strategy
- Commit to compliance with stated Design Objectives via future UWMP
- Site water balance
- Fit-for-purpose water use strategy including conservation
- Management strategies for environmental assets & site conditions
- Further refine urban water management system - quantify land required to meet design objectives
- Suite of proposed BMPs & BPPs (treatment train approach) - depicted in diagrams
- Recommended monitoring framework
- Identify requirements of UWMP

Stage 4: Subdivision Application including Urban Water Management Plan (UWMP)
- Consistent with requirements of LWMS
- Demonstrated compliance with Design Objectives
- Site conditions – actions to manage impacts on water dependent ecosystems & contamination/nutrients
- Specific BMPs and design of water management system including stormwater
- Management of subdivisional & construction works
- Monitoring and maintenance arrangements

Stage 5: Construction of subdivision
- Construct design including BMPs as required in UWMP
- Implement erosion prevention & sediment control
- Monitor impacts of construction

Stage 6: Development
- May identify requirements via developer covenant
- Implement water conservation strategies
- Implement non-structural best management practices
- Implement monitoring program/mechanism

Figure 3: Proposed Framework for Implementing WQIP (Source: adapted from Essential Environmental Services, 2005)
8.2 Stage 2: District planning

8.2.1 Local Planning Strategy

The early identification of constraints and opportunities in strategic planning instruments is critical to the delivery of environmentally sustainable urban development. The Local Planning Strategy should identify and incorporate the river subcatchments mapped in the Peel-Harvey WQIP to ensure that a catchment management approach is facilitated.

Where a significant change in land use is likely to be proposed, usually as a result of preparing a Local Planning Strategy, State Government together with Local Government should undertake necessary investigations and analysis (modelling) to (a) assess the potential impact of the proposed land use change on the water resources of the affected subcatchment and (b) implications for attainment of WQIP targets for the affected subcatchment. This assessment should provide a key input to the final land use plan for the area.

The proposed land use scenario should be assessed by the DEC using the Peel-Harvey Decision Support System. The preferred scenario should deliver water quality outcomes consistent with the attainment of the objectives of the Peel-Harvey WQIP, recognising the need to consider other planning matters.

The approved Local Planning Strategy will then provide the context for preparation of more detailed Structure Plans and Outline Development Plans to support scheme amendments and provide guidance for subdivision.

A Local Planning Strategy should:

- Propose local and regional catchment management objectives and Environmental Quality Criteria consistent with the WQIP as well as design objectives for all elements of total water cycle management;
- Map the surface and groundwater catchments, including significant water resources such as waterways and wetlands, identifying critical water resource management issues, at a scale consistent with the proposed “scenario”, and where supported by the land use scenario, use the boundaries as a basis for defining Planning Precincts;
- Undertake a desktop analysis of past land use with the potential for contamination, including high levels of nutrients and “high risk” Acid Sulfate Soils areas (see Planning Bulletin 64: Acid Sulfate Soils, WAPC, 2003) and develop a strategy to address these environmental issues during more detailed planning stages;
- Identify social, cultural and heritage values of significant water resources;
- Discuss water sources for drinking and other water needs, including future settlement needs, identifying any existing or future proclaimed water source catchments and major infrastructure needs (e.g. waste water treatment plants). Consider synergies with management of stormwater, groundwater and wastewater for supply of fit-for-purpose needs;
- Depict the location of future conservation reserves, multiple use open space corridors, urban forestry belts, waterway corridors and wetland reserves;
- Identify portions of the study area where the existing zoning of land is inconsistent with the land use scenario and suggest possible opportunities for acquisition or offsets that would provide equitable outcomes;
• Present a “land use scenario” for the relevant river subcatchment which has been evaluated by the DEC using the Peel-Harvey Decision Support System and found to deliver a water quality outcome consistent with the objectives of the Peel-Harvey WQIP and EPP;
• Identify highly recommended catchment management actions;
• Identify future water quality and geotechnical monitoring required including the identification of responsibilities and required timing, to support more detailed planning, particularly the urbanisation of areas consistent with the assessed land use scenario; and
• Facilitate the implementation of any existing DEC, Department of Water or Water Corporation water resource management plan, and provide strategic direction for future Local Government Capital Works Plans.

Where development is planned for the longer term, the plan should identify a process for review and revision, which allows for the reassessment of constrained land having regard for any post-development monitoring results, advances in technology and/or the success of any WSUD strategies applied.

8.2.2 District structure planning/ Region Scheme Amendment

District level planning usually involves preparation of a District Structure Plan that is used to support the future rezoning of land for eventual development. A District Structure Plan is usually prepared by the Local Government and should be consistent with the requirements of Liveable Neighbourhoods Edition 3 (WAPC, 2004). It usually covers an area of greater than 300ha. Rezoning to Urban within Region Scheme areas should be supported by a district structure plan.

The District Structure Plan should be supported by a District Water Management Strategy. The District Water Management Strategy should be summarised as a chapter in the District Structure Plan and linked as a technical appendix.

The District Water Management Strategy should incorporate:

• Objectives for total water cycle management including water quantity and quality management objectives consistent with the WQIP;
• Broad description of constraints to water management within the study area due to existing infrastructure, existing land uses, possible groundwater pollution plumes, Acid Sulphate Soils (both Actual and Potential) and groundwater capture zones of significant wetlands and other groundwater dependent ecosystems (GDE’s);
• Desk top assessment of past land use with the potential for contamination including high nutrient levels;
• Discussion of potential water sources for drinking water and other uses having consideration of impacts of use/ allocation and infrastructure and management requirements, highlighting the preferred options for supply of non-potable water for fit-for-purpose use and giving consideration to major infrastructure needs;
• A Sampling and Analysis Plan (SAP) including regional surface and groundwater investigations (monitoring of a minimum of 12 -24 months required), modelling and analysis to provide:
  o groundwater level fluctuations over time to determine the maximum groundwater levels, and from this, areas suitable for development;
Model Peel-HWSUD Local Planning Policy

- hydrogeological parameters of the study area and relevant catchments, including surface water flow paths, 100yr flood plains (as provided by the DoW), regional groundwater flow directions, likely impacts of development on significant GDE's;
- an assessment of regional groundwater quality and quantity, including resident catchment and aquifer conditions; and
- an assessment of the recommended land use scenario based on the above elements and any suggested modifications;

- Strategies and recommendations for planning precincts to guide and control land uses and development where necessary.
- Identification of specific issues/areas likely to require specialised investigation and management at later stages of planning;
- Demonstrated understanding of Best Management Practices (BMP's) for potable and non-potable water usage, groundwater management and stormwater management and Best Planning Practices to be utilised in the study area;
- Definition of a conceptual stormwater management system including identification of land requirements for management of the 100yr flood event, conceptual multiple use corridors and treatment trains. The ability of the system to meet any identified targets, including WQIP targets, should be discussed and addressed;
- Recommendation for strategies and responsibilities for further local surface and groundwater monitoring, both pre and post development including data analysis, presentation and reporting mechanisms; and
- Recommended implementation framework identifying funding and ongoing maintenance responsibilities, and including monitoring and technical review of the regional strategy.

8.3 Stage 3: Local planning

8.3.1 Local Planning Scheme Amendment

Where a District Structure Plan and corresponding District Water Management Strategy has not been prepared as a preface to rezoning the Local Planning Scheme, Local Government may require preparation of a water management strategy, prior to determining whether to initiate a Local Planning Scheme amendment that will enable the development of land for residential, commercial or industrial purposes. This requirement is consistent with the environmental conditions placed on the Peel Region Scheme. The water management strategy should address, as a minimum, the requirements outlined in Section 8.2.2.

Where areas are proposed to facilitate residential development, these areas should be rezoned to a “Residential Development Zone”. The provisions of such a zone should then include a requirement for preparation of a Local Structure Plan and Local Water Management Strategy. The provisions should specify the matters to be addressed in both documents and require advertising of the Local Structure Plan and Local Water Management Strategy to ensure that specialist advice may be received regarding the appropriateness of the proposed water management system.
8.3.2 Local Structure Planning

Local planning is usually undertaken for areas of less than 300ha. Local planning tools include Local Structure Plans or major Outline Development Plans.

A Local Water Management Strategy should be prepared in parallel with the development of any Local Structure Plan or major Outline Development Plan. The Local Water Management Strategy should seek to integrate strategic catchment management and land-use planning objectives.

The Local Structure Plan/Outline Development Plan should be consistent with the objectives and requirements of Liveable Neighbourhoods Edition 3 (WAPC, 2004), outlined in a format and supported by a level of detail acceptable to Local Government.

The Local Water Management Strategy forms an integral part of any Local Structure Plan/Outline Development Plan. It should be prepared to the satisfaction of the Department of Water (DoW). Local Government is unlikely to support any associated Local Structure Plan/Outline Development Plan without an approved Local Water Management Strategy.

The Local Water Management Strategy should address the following:

- Design objectives relating to performance of the development with regards to potable water consumption, groundwater quantity, groundwater quality, stormwater quantity and stormwater quality. These should be consistent with attainment of the Environmental Quality Criteria and load targets in the WQIP and preceding District Water Management Strategy. Compliance with these objectives should be demonstrated both within the Local Water Management Strategy and at time of subdivision.

- Comprehensive site assessment and planning to identify constraints and opportunities including:
  - Existing and proposed natural and artificial water pathways, including multiple-use corridors;
  - Other groundwater dependent ecosystems, areas of notable landscape or landform;
  - Social, cultural and heritage values of significant water resources;
  - Potential pollution export risk levels based on historical land uses, soil type, hydrology and proposed land use; and
  - Pre- and Post-development extent of deep rooted perennial vegetation, particularly native remnant vegetation, waterways and wetlands of conservation significance; and the extent of the buffers proposed to assist their protection;

- The results of 12 months to two (2) years monitoring of ground and surface water levels, flows and quality; as well as studies of the geotechnical and biological characteristics of the study area. In sensitive areas, Council may require a longer duration of baseline monitoring where advised by DoW. These studies should include:
  - Proposed waterway and wetland corridors with cross/long sections depicting 1 in 100 ARI flood levels, existing maximum groundwater levels;
  - The estimated current water balance and nutrient mass-balance of the study area; based on the above-mentioned baseline monitoring results;
- Predicted post-development water balance and nutrient mass-balance of the study area; and
- A comparison of the results of the post-development water cycle/nutrient balance with the Environmental Quality Criteria, including TP and TN concentrations/loads, flow rate/volumes/discharge of surface and ground waters.

- The strategy to avoid, minimise, mitigate or offset geotechnical, hydrological and environmental constraints.
  - Existing natural ground levels and proposed finished ground levels;
  - Pre- and post-development maximum groundwater levels; and
  - The proposed WSUD practices and treatment trains, including their integration into the urban landscape.

- Conceptual urban water management system, including:
  - Identification of land required for storage and retention of stormwater for the 1 in 100 yr ARI, 1 in 5/10 yr ARI (as indicated by the appropriate Local Government) and 1 in 1yr ARI storm events;
  - Identification of appropriate BMP's for management of water quality and quantity and indicative drawings of treatment trains and design approaches including location within the structure plan area;
  - Map of existing groundwater levels and any proposed Controlled Groundwater Levels (CGL) (including subsoil drains) with justification for this control including potential impacts on groundwater dependent ecosystems;
  - Fit-for-purpose water use strategy - mechanisms to conserve potable water and reuse wastewater or stormwater (including those relating to development design and construction); and
  - Infrastructure and management requirements for proposed water, wastewater and stormwater systems, having consideration of infrastructure already existing and identifying any necessary approvals required;

- Where a constructed water body is proposed, identify its purpose, design and management;
- Issues to be addressed at subdivision stage (included in an Urban Water Management Plan);
- Lifecycle cost assessment of the proposed water cycle strategy; and
- Proposed implementation of strategy including roles, responsibilities and funding for monitoring and maintenance.

The above list is based on the requirements of Peel Region Scheme Ministerial Statement No. 000601 dated 2/8/02.

The Local Water Management Strategy should be consistent with the WSUD Principles detailed in Part 6 of this Policy, the relevant Environmental Quality Criteria as per Appendix 1 of this Policy; and the relevant preceding District Water Management Strategy. Further information to support achievement of the WSUD principles is detailed in the Peel-Harvey WSUD Technical Guidelines.
8.4 Stage 4: Subdivision

Applications for subdivision should be supported by an Urban Water Management Plan (UWMP) which implements the preceding Local Water Management Strategy. The UWMP will demonstrate how the WSUD practices and treatment trains previously identified in the Local Water Management Strategy will be applied at the individual subdivision estate and/or individual allotment scale.

The UWMP should provide a detailed plan identifying the WSUD practices to be used on the subject land, together with responsibilities and cost estimates (where appropriate) for their construction, operation and ongoing maintenance. This will ensure that appropriate information is provided prior to determining the proposal regarding the proposed drainage and nutrient management measures, and their environmental, social and economic implications. The level of detail of the UWMP should be appropriate to the size and potential risk associated with the development. All high risk proposals must be supported by a comprehensive UWMP.

The risk associated with a proposal is dependent on the size (area and lot yield) of the proposal, the degree of previous water planning and investigation and the characteristics of the site (i.e. depth to groundwater, soil type, proximity to GDEs). Further guidance is provided in Appendix 3.

Where a low risk application does not include an UWMP, one should be required as a condition of subdivision. Recommended wording is as follows:

"An Urban Water Management Plan to be prepared prior to commencement of ground disturbing activities, consistent with the [name] Local Water Management Strategy and the [name] District Water Management Strategy, to the satisfaction of the WAPC on advice of the Department of Environment."

This ensures that if changes are required to the design to improve the performance of the stormwater system, these can be done prior to commencing civil works.

The UWMP should address the following matters.

- Compliance with the design objectives in the Local Water Management Strategy. Demonstration of compliance should be achieved through appropriate assessment tools, calculations or assessments;
- Comprehensive site analysis (existing stormwater system in and adjacent to the site, existing services, constraints);
- Management of groundwater contamination ("hot spots"), Acid Sulphate Soils (both Actual and Potential) and other specific site conditions including identification of pollutants likely to emanate from the site (including sources, effects, and likely pathways), use of Living Streams, soil amendment, vegetated soil filters or vegetated swales and buffers;
- Protection of ecological, social and cultural values of waterways, wetlands (and their buffers), remnant vegetation and ecological linkages;
- Water conservation and re-use practices to be applied throughout the study area;
- Management of groundwater levels including proposed fill volumes, type of fill material, pre and post development ground level and any proposed dewatering;
• Detailed stormwater management design including the size, location and design of public open space areas and including;
  o Stormwater drainage design for the development, including layout plans, design details and calculations including location of pits, pipes sizes, grades and discharge outlet details, on-site detention and retention (if required); and
  o Details of specific structural and non-structural stormwater treatment and management measures to be implemented to control the pollutants in accordance with the relevant Environmental Quality Criteria, including their function, location, maintenance requirements including the ten year annualised cost to Council, expected performance and ongoing management arrangements;
• Where a constructed water body is proposed, further justification may be required for its purpose and design to meet any relevant DoW or Local Government requirements. This should include a detailed description of management requirements including water quality treatment, as well as replacement costs of the water body and associated infrastructure;
• Management of disease vector and nuisance insects such as mosquitoes and midges;
• Construction and Building Site Management Plan for subdivisional works, and recommended construction site management plan for future building works on the proposed private allotments;
• Maintenance, monitoring and reporting program, and/or development contribution plan; and
• Implementation Plan including roles, timeframes, costs, funding and responsibilities.

The UWMP should be consistent with the WSUD Principles detailed in Part 6 of this Policy, the relevant Environmental Quality Criteria as per Appendix 1 of this Policy; the relevant preceding Local Water Management Strategy and/or District Water Management Strategy, and the Peel-Harvey WSUD Technical Guidelines.

To ensure implementation of the UWMP, it is recommended that a condition is placed on the subdivision approval as follows:

_The approved Urban Water Management Plan shall be implemented by the landowner, including construction of the identified stormwater management system, to the satisfaction of the WAPC on advice of Local Government._

Where an UWMP has not been approved and the development is considered to be low risk (see Appendix 3), the application will need to demonstrate compliance with the WSUD Principles detailed in Part 6 of this Policy, the relevant Environmental Quality Criteria as per Appendix 1 of this Policy; and any relevant preceding UWMS and/or District Water Management Strategy, and the Peel-Harvey WSUD Technical Guidelines.

Council may require the applicant to prepare as a condition of approval but prior to commencing site works, a Site Environmental Management Plan detailing management actions and responsibilities for ensuring construction works accord with the HIA/DoE Greensmart-Cleansite Management Guidelines.

Development should also be consistent with the approved Building and Landscaping Guidelines, which may be enforced through application of developer covenants.

9 INTERPRETATIONS

AAMGL – Average Annual Maximum Groundwater Level is currently being phased out by the Department of Environment as a measure of depth to groundwater (see CGL). 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.

Best Planning Practice – Best practical planning approach for achieving water resource management outcomes from redevelopments.

Business-Commercial – A zone and/or landuse description where the predominant uses include convenience retail, business offices, restaurants and cafes, intermixed with health, welfare and community facilities.

Controlled Groundwater Level (CGL) - Defined as the controlled (i.e. modified) groundwater level (measured in metres Australian Height Datum) at which the DoE will permit drainage invert to be set. The CGL must be based on local and regional environmental water requirements, determined in accordance with the Environmental Water Provisions Policy for Western Australia (WRC, 2000) and the Urban Development and Determination of Ecological Water Requirements of Groundwater Dependent Ecosystems (DoE, in preparation).

Commercial-Industrial – A zone and/or land use description where the predominant uses include service commercial and light industrial use-classes, including wholesaling, warehouse-retail, showrooms, trade and professional services.

Decision Support System (DSS) – A modeling tool developed as part of the Coastal Catchments Initiative for use in the Peel Inlet-Harvey Estuary catchment area. It models the likely water quality impact of land use change at a River Subcatchment scale.
Environmental Quality Objective – Water quality, quantity, conservation and management objectives, which form the basis for the design and management of land uses and developments.

Environmental Value – As defined in the Environmental Protection Amendment Act 2003.

District Water Management Strategy – A plan prepared in support of a District Structure Plan or Region Scheme Amendment. Guidance on the content of a District Water Management Strategy is provided in Section 8. The District Water Management Strategy should demonstrate compliance with the WQIP water quality objectives, likely through assessment of the proposed land use scenario by the Department of Environment using the LASCAM Decision Support System.

Local Water Management Strategy – A strategy prepared as part of a Local Structure Plan (or Outline Development Plan). The strategy should be prepared by the land owner in partnership with the relevant Local Government and Department of Environment, in consultation with the Water Corporation, Department of Planning and Infrastructure, and local NRM Catchment Groups. The Local Water Management Strategy may be prepared for one or more of the watersheds nested within a River Subcatchment. Guidance on the content of an Local Water Management Strategy is provided in Section 8.

Non-Structural Practices - Non-Structural Practices are 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.

Offset – An environmentally beneficial activity undertaken to counterbalance an adverse environmental impact or harm, with the goal of achieving an approved environmental quality objective or target.


Regional Water Resource Management Plan – A plan prepared by the Department of Environment under Rights in Water and Irrigation Act 2000 detailing the environmental and extraction allocations, and the abstraction regimes for ground and/or surface water resources. Also recommends land use controls to protect those water resources.

Residential – A zone and/or land use description where the predominant use is for residential accommodation in an urban setting and at a range of different densities to meet the needs of different household types.
**Model Peel-HWSUD Local Planning Policy**

**Reporting Subcatchment** – A combination of River Subcatchments within a single River Catchment (Figure 1), equipped with by an automated Load Monitoring Unit and used to monitoring changes in nutrient loads and validate the Decision Support System.

**River Catchment** – Refers to the catchment of the Serpentine, Murray or Harvey River, as mapped in the Peel-Harvey WQIP (Figure 1).

**River Subcatchment** – Refers to the 216 catchment units mapped in the Peel-Harvey WQIP. Sometimes referred to as Primary Subcatchments, they are nested within River Catchments (Figure 1)

**Rural-Residential** – A zone and/or land use description where the predominant use is for residential accommodation in a rural setting. Commonly permissible agricultural use-classes include “intensive agriculture”, “stables”, etc.

**Site Environmental Management Plan** – An Environmental Management Plan prepared as a condition of approval for implementation by the applicant’s contractors, which details the management measures for ensuring construction works are managed to prevent adverse impacts on local amenity and the environment.

**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.

**Subdivision Guide Plan** – An indicative plan of subdivision submitted with Scheme Amendment documentation.

**Subject Land** – The land parcel(s) being studied during an statutory assessment or strategic investigation.

**Urban Water Management Plan** – A plan prepared to accompany an application for subdivision which details the specifics of the stormwater management system design. Where significant (see Appendix 3), the plan should be prepared by the land owner in consultation with Local Government, DoE and Water Corporation. Guidance on the content of an UWMP is provided in Section 8.

**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

**Watershed** – Also referred to as a Secondary River Subcatchments or a Planning Precinct.
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 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 Environment 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 Environment 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:

1) In the first instance an applicable District Water Management Strategy endorsed by the Department of Environment;

2) An applicable Local Water Management Strategy endorsed by the Department of Environment.

3) The Peel-Harvey Water Quality Improvement Plan.

4) The interim environmental quality criteria set out in Appendix 2 below.

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 DoE.
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 DoE.

*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 DoE, must be designed to maximise predation of mosquito larvae by native fauna to the satisfaction of the Local Government on advice of DoE and Department of Health.
APPENDIX 2 – POLICY AREA

"INSERT MAP OF POLICY AREA AND WQIP CATCHMENT BOUNDARIES FOR YOUR LOCAL GOVERNMENT AUTHORITY AREA."
**APPENDIX 3 - RISK CLASSIFICATION FOR SUBDIVISION AND DEVELOPMENT**

<table>
<thead>
<tr>
<th>Risk Level</th>
<th>Subdivision</th>
<th>Development</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Low –</strong></td>
<td>Example Only:</td>
<td>To be defined by LGA.</td>
</tr>
<tr>
<td></td>
<td>Low-medium density residential subdivision creating less than four lots.</td>
<td>Possibly “Commercial or industrial use connected to deep sewerage or licenced under Part V of the Environmental Protection Act.”</td>
</tr>
<tr>
<td></td>
<td>Commercial, Industrial, or Rural Residential subdivision applications that create no more than three lots.</td>
<td></td>
</tr>
<tr>
<td><strong>Medium</strong></td>
<td>Example Only:</td>
<td>To be defined by LGA.</td>
</tr>
<tr>
<td></td>
<td>Low-medium density residential subdivision creating four to 20 lots and less than 20ha.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Commercial, Industrial, or Rural Residential subdivision applications that create no more than 15 lots.</td>
<td></td>
</tr>
<tr>
<td><strong>High –</strong></td>
<td>Example Only:</td>
<td>Example Only:</td>
</tr>
<tr>
<td></td>
<td>Any proposal on land where two or more of the following apply:</td>
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</tr>
<tr>
<td></td>
<td>o annual maximum groundwater level is less than 1.2 metres below the natural ground surface;</td>
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</tr>
<tr>
<td></td>
<td>o Any proposed off-site drainage could lead to degradation of wetlands or waterways.</td>
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</tr>
<tr>
<td></td>
<td>o Phosphorus input is likely to exceed the 15kg/ha/pa.</td>
<td>o Phosphorus input is likely to exceed 15kg/ha/pa.</td>
</tr>
<tr>
<td></td>
<td>o Nitrogen input is likely to exceed 150kg/ha/pa.</td>
<td>o Nitrogen input is likely to exceed 150kg/ha/pa.</td>
</tr>
</tbody>
</table>
APPENDIX 4 - DECISION PROCESS FOR STORMWATER MANAGEMENT IN WA