



# LEGISLATIVE OPTIONS FOR URBAN STORMWATER QUALITY MANAGEMENT IN WESTERN AUSTRALIA



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# LEGISLATIVE OPTIONS FOR URBAN STORMWATER QUALITY MANAGEMENT IN WESTERN AUSTRALIA

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**WATER AND RIVERS COMMISSION**

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## Steering Committee

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# Executive summary

This report provides a review of the adequacy of existing Western Australian legislation for ensuring compliance with Best Management Practices (BMPs) in water quality in urban areas.

The review was undertaken as part of a larger project which involved the development of the Urban Stormwater Quality Management Manual for Western Australia. The manual provides practical advice to developers, planners and engineers on the implementation of a range of BMPs. The adoption of the techniques and processes outlined in the manual will assist in enabling achievement of water quality targets set in the Swan Canning Environmental Protection Policy currently in preparation.

The maintenance, and in some cases, improvement of water quality is essential to ensure the long term sustainability of urban areas in Western Australia. Water quality is a function of land use practices, land management and the design and management of stormwater systems.

The law and administration relating to water resources management in Western Australia is complex, and is shared among a number of agencies using various legislative instruments. The principal Acts, regulations and statutory policies which currently influence water quality in urban areas include:

- Environmental Protection Act, 1986.
- Environmental Protection (Swan Coastal Plain Lakes) Policy, 1992.
- Environmental Protection (Peel Inlet - Harvey Estuary) Policy, 1992.
- Environmental Protection (Gnangara Mound Crown Land ) Policy, 1992.
- Draft Environmental Protection (Jandakot Mound Groundwater) policy, 1993/
- Draft Environmental Protection (Swan & Canning River) Policy, 1995.
- Town Planning and Development Act, 1928.
- Metropolitan Water Supply Sewerage and Drainage Act Amendment, 1982.
- Waterways Conservation Act, 1976.
- Swan River Trust Act, 1988.
- Planning Legislation Amendment Act, 1996.
- Regulations associated with Local Government Act, 1995.

Major changes have occurred recently to the legislation and administrative arrangements relating to water and natural resource management in other Australian States and other countries. In Queensland, Canada and New Zealand legislative reform has integrated land planning with natural resource management. In the United States the importance of stormwater in water quality is recognised in legislative and administrative arrangements and some Local Governments have established stormwater utilities and require the adoption of BMPs.

The adoption of BMPs is considered essential for the protection, maintenance or improvement of water quality. A mix of regulatory (statutory) and non-regulatory mechanisms is likely to be required to achieve the adoption of BMPs.

The Western Australian legislative framework provides some strengths and also presents opportunities for improvement. A series of recommendations, aimed at ensuring compliance with the BMPs outlined in the manual is presented.

## Recommendations

Based on the information presented in the present report, it is recommended that:

1. An attempt be made to achieve the general adoption of Best Management Practices for Water Sensitive Urban Design through use of existing legislation rather than through the development of an Act with specific purposes and powers as has occurred in some other States of Australia.

This recommendation is made on the basis that the adoption of a new Act is likely to be difficult and time consuming, and the fact that existing legislation would appear to provide specific mechanisms for the achievement of the primary objective.

2. The Government establish a Stormwater Quality Coordinating Committee to coordinate the Stormwater Quality initiative.

The functions of the Stormwater Quality Coordinating Committee should be to set policy and ensure coordination across agencies within the area of stormwater quality. It is suggested the Stormwater Quality Coordinating Committee be directed by Government, through the joint Ministers of Water, Environment, Planning and Local Government, to prepare a strategy for the legislative management of stormwater quality



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which would include as appropriate such matters as the identification of priority management areas, water quality criteria, criteria for BMPs, indicators against which performance can be measured, responsibilities and a time frame for the implementation of the strategy.

The Stormwater Quality Coordinating Committee should comprise representatives from the Water & Rivers Commission, Water Corporation, Department of Environmental Protection, Ministry for Planning, Local Government Authorities and interest groups. The members should operate at a senior level and be able to influence policy and decisions and bring about organisational change.

The Stormwater Quality Coordinating Committee also should be supported by a Working Group from the relevant agencies and interest groups, including the Water & Rivers Commission, Water Corporation, Department of Environment, Ministry for Planning, WA Municipal Association and the Urban Development Institute of Australia. The Working Group would provide briefing papers that identify issues, current impediments, opportunities, programs, resources and responsibilities relating to stormwater quality in response to working briefs developed by the Stormwater Quality Coordinating Committee. The Stormwater Quality Coordinating Committee would then brief their respective Ministers.

This two tiered approach to the Stormwater Quality Coordinating Committee is similar to the approach adopted by the Road Safety Council, which also involves several government Ministers, their associated agencies and interest groups. The proposed model would ensure coordination across agencies, as well as government support for the implementation of stormwater quality in urban areas.

3. The progress of the implementation of the strategy be reviewed after a period of say three years, and if significant progress has not been made towards the general adoption of BMPs, that consideration again be given to the introduction of specific legislation designed to better achieve this objective. Specific performance indicators should be developed to measure compliance with BMPs which may include physical biological and social measures.
4. Initiatives which could be considered by the Stormwater Quality Co-ordinating Committee include the following:

- Establishment of a formal protocol between the Ministry for Planning and the Water and Rivers Commission, requiring Water and Rivers Commission input and consent in the development of water management conditions for regional schemes, town planning schemes, structure plans and the assessment of subdivision applications.
- Establishment of a formal Agreement between Water & Rivers Commission, Water Corporation, EPA and the WA Municipal Association dealing with the management of stormwater quality.
- Ensure the use of WSUD principles and practices is recognised in the Community Code currently being prepared as a statutory policy under the Town Planning & Development Act, 1928.
- Co-operate with and assist the Western Australian Planning Commission to develop a Statement of Planning Policy that recognises and adopts WSUD principles and practices. The Statement of Planning Policy may be based on the current non-statutory Policy DC6.3. A Statement of Planning Policy would require all Town Planning Schemes to consider WSUD.
- Encouraging the EPA to consider Water Sensitive Urban Design (WSUD) when assessing Town Planning Schemes, Region Plans, amendments of each of these, and Statements of Planning Policy and by the attachment of conditions requiring the Water & Rivers Commission to give approval to conditions.
- Requests to the EPA to finalise the Environmental Protection Policy on the Swan Canning River.
- Requesting the Western Australian Planning Commission to identify regional open space through structure planning procedures for the purpose of drainage and water management.
- Encouraging Local Authorities to require Water Sensitive Urban Design BMPs in development applications.
- Encourage Local Government Authorities to develop stormwater management plans through financial incentives and technical assistance.
- Consider the use of incentive mechanisms such as credits for Public Open Space requirements to encourage the adoption of BMPs.
- Investigation of mechanisms to integrate land use planning with catchment planning.



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# 1. Introduction

## 1.1 Background

This report provides a review of the adequacy of existing Western Australian legislation for ensuring compliance with Best Management Practices (BMPs) for Water Sensitive Urban Design (WSUD) in urban areas. The review was part of a larger project which involved the development of a manual of BMPs for the control of urban stormwater quality. The manual, prepared recently for the Water & Rivers Commission, provides practical advice to developers, planners and engineers on the implementation of a range of stormwater BMPs.

Land use directly affects water quality. In undeveloped areas natural physical, chemical and biological processes interact to recycle most materials found in stormwater. However, in urbanised areas the natural processes are disrupted. Materials such as animal wastes, oil and greases, heavy metals, fertilisers and pesticides are carried by stormwater to wetlands, lakes, rivers and estuaries (Evangelisti & Associates et al, 1996). Stormwater quality may also affect both the quality and quantity of groundwater.

Urban stormwater comprises runoff from urban areas including major flows during and following rain, and dry weather flows. Factors influencing the amount of stormwater and the contaminants in it include duration and intensity of rain, type of land use, proportion of impervious surfaces, topography, design, and management of stormwater systems.

Runoff from rural land and urban development is often the most significant contributor to the deterioration of water quality in natural and artificial waterways in many parts of Western Australia (Welker, 1995). WSUD provides a framework for incorporating the stormwater-related issues for urban areas of water quality, water quantity and water conservation, plus broader environmental and social objectives as explicit design objectives and criteria. The emphasis of WSUD is on retention, treatment, use, and environmental and cultural benefit from the stormwater system rather than conveyance (i.e. drainage) and disposal.

Water sensitive planning and management principles include:

- Incorporation of water resource issues early in the land use planning process.
- Addressing water resource management at the catchment or subcatchment level.
- Recognising stormwater management is part of the total water resource management.
- Wherever possible, using the natural contours in the stormwater management system to incorporate as much as possible of the features and functions of the natural stormwater system.

- Depending on the water resource management objectives for assigned beneficial uses, ensuring that past urban development conditions approximate pre-urban conditions.
- Maximising local on-site storage and utilising runoff.
- Emphasising the use of vegetation (particularly indigenous vegetation) in stormwater management to promote filtering and slowing of runoff to pre-development conditions. (DPUD et al, 1993).

These principles have been translated in the Best Planning Practices and Best Management Practices, described in detail in the Water Sensitive Design Guidelines (DPUD et al, 1993). The BMPs have been reviewed and are outlined in the Urban Stormwater Quality Management manual for Western Australia.

BMPs in the management of urban stormwater include catchment-based planning and management, integrated urban land use planning, stormwater management plans, treatment trains and multiple use corridors, as well as engineering practices, chemical processes and changes in community attitudes and behaviour.

Effective water quality management in urban areas therefore requires close integration of water resource management, land use allocation, catchment and land management and environmental protection at the strategic, regional and local levels.

Compliance with the BMPs in urban stormwater quality will require utilisation and integration of planning water resources, environmental protection and local authority legislation. Existing legislation in these areas varies in its ability to ensure the adoption of BMPs.

This report therefore provides an analysis of National and State initiatives relating to water quality, a review of the legislative framework relating to water quality in Western Australia, and draws on overseas experience in management of urban water quality to provide recommendations for future legislation and administration relating to urban stormwater quality.

The term “legislation” is used throughout this report in its broadest sense of Acts of Parliament, Regulations and statutory policies.

## 1.2 Policy context

The objective of the Government of Western Australia and its agencies to promote water quality through adoption of WSUD conforms with various National and State initiatives relating to the protection and management of





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the environment. A brief summary of these initiatives is presented below.

### **1.2.1 Ecologically sustainable development**

The adoption of WSUD is part of the international initiative towards Ecologically Sustainable Development (ESD). The Australian Federal, State and Local Governments are committed to the adoption of the four guiding principles of ESD, namely:

- The precautionary principle,
- Inter and intra generational equity,
- Conservation of biological diversity and ecological integrity, and
- Improved valuation, pricing and incentive mechanisms (Bates, 1995).

The National Water Quality Management Strategy, developed jointly by the Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) and the Australian and New Zealand Environment and Conservation Council (ANZECC), is based on the principles of ESD. ESD requires that stormwater management recognises the importance of protecting biological diversity and maintaining essential ecological processes.

The National Water Quality Management Strategy is developing policies, principles and guidelines for water quality management including the Draft National Guidelines for Urban Stormwater Management (ARMCANZ, 1996). These will be supported by State Action Plans tailored to local conditions (ANZECC, 1992).

### **1.2.2 Council of Australian Governments**

The Council of Australian Governments (COAG) has agreed that ESD will be a focus for industry development in Australia. The fourth principle of ESD, that of improved valuation, pricing and incentive mechanisms, is being achieved through the restructuring of industry and the implementation of the Hilmer report. This will be achieved through the adoption of three guiding principles:

- The concept of “polluter pays”.
- That the users of goods and services should pay full price based on the full life cycle costs of providing the goods, including the use of natural resources and disposal of waste.
- Environmental goals, having been established, should be pursued in the most cost effective way by establishing incentive mechanisms (Bates, 1995).

### **1.2.3 National water resources reform**

As a signatory to the COAG Agreement to implement the national competition policy in 1995, the Western Australian Government agreed to implement a strategic framework

for the efficient and sustainable reform of the Australian Water Industry. This involves reforms of the pricing of water, water allocation or entitlements, institutional reform, consultation and public education, environment, water resources research, and taxation (Gardner, 1996).

Equally importantly, the National Water Resources reform also addresses the achievement of ecological sustainability, administrative arrangements ensuring an integrated approach to natural resource management, and the adoption of an integrated catchment approach to water resource management.

The Commonwealth and State Governments, through COAG, have agreed on water resource policy. Some of the principles of water resource policy include:

- Full cost recovery for water resources.
- Pricing principles which reflect the true value of water.
- Establishment of a water market where possible.
- Definition of environmental water requirements (Cummings et al, 1995).

Tradeable water entitlements are part of the COAG Water Reform Agreement and it is anticipated that these will be developed in Western Australia within the next decade (Western Australian Planning Commission, 1995).

### **1.2.4 Inter-Governmental agreement on the environment**

The Inter-Governmental Agreement on the Environment (1992) addresses ESD at the three levels of Government within Australia. The agreement defines the roles, responsibilities and interests of the Commonwealth, State and Local Governments in relation to the environment and recognises the need for effective integration of economic and environmental considerations in decision making processes (Taskforce, 1996).

The Commonwealth Government funds and supports programs, including the National Landcare Program, that are aimed at improving catchment management practices, publishes research and discussion papers that support ESD, and the development of national guidelines.

State Governments have overall responsibility for land and water use planning and management within their jurisdiction. Planning, development and regulatory controls and institutional arrangements are already in place. In some States, fragmented administrative responsibilities across natural resource management areas have been addressed through legislation enabling total or integrated management structures (ARMCANZ and ANZECC, 1996).

Local Government authorities and State Government agencies have the responsibility for providing and



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managing urban stormwater drainage systems.

### **1.2.5 Review of water resources law in Western Australia**

The effectiveness and operation of water resources law in Western Australia and options for reform are currently being reviewed by the Centre for Commercial and Resources Law in a joint project with the Water and Rivers Commission (WRC). The review has a much broader scope than the subject of this report, as it will examine the legislative framework relating to water resources planning and management, water resources licensing and allocation, and water resources quality protection, and will evaluate the suitability for Western Australia of alternative legal structures adopted elsewhere.

There has been no substantial reform of water resources law in Western Australia for several decades. Some of the most important water Acts were written early this century. For example, the Rights in Water and Irrigation Act was promulgated in 1914 and the Metropolitan Water Supply Sewerage and Drainage Act in 1909. There have been many amendments made to the water Acts (for example, the Metropolitan Water Supply Sewerage and Drainage Act Amendment, 1982) and some, such as the amendment which allowed for pollution control provisions to be part of the Environmental Protection Act, 1986, have been quite significant. However, none of these changes provided for major reform in water law (Gardner, 1995).

Recent local and national developments have highlighted the need to review present water law and for consideration of how the needs of the community for better water management can be met through law reform. These developments include:

- Progressive separation of utility, water resource management and regulatory functions in Government.
- The need for improved natural resource management with better integration between agencies.

- Increased use of market mechanisms to allocate and manage natural resources.
- Increased application of polluter and beneficiary pays philosophies.
- Increased power and accountability in environmental protection legislation.
- Legislation becoming binding on the Crown.
- National inter-Governmental agreements related to ecologically sustainable development.
- Increased community interest and involvement in land and water management.
- Increasing commercialisation of agencies.
- The current review of the Waterways Conservation Act.
- The establishment of a Water & Rivers Commission with statutory responsibility for allocation and protection of water resources.

### **1.2.6 Review of natural resource management in Western Australia**

Although focusing on agricultural lands, the conclusions of the Taskforce into Natural Resource Management and Viability of Agriculture in WA (Taskforce, 1996) has relevance to water management in urban areas, as many of the natural resource management issues are similar in urban and agricultural areas.

The Taskforce recognised that the legislation and processes relating to the management of natural resources in Western Australia need reform. Land and water resource management are not properly linked and catchment plans have no statutory status.

The Taskforce recommends that natural resource management should be based on comprehensive natural resource management plans at regional, catchment and local levels. Land use and land management boundaries should be consistent with catchment boundaries and natural resource management plans may need to be supported by changes in policy and legislation (Taskforce, 1996).



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# 2. Water quality legislation in other Australian states and other countries

## 2.1 Introduction

Information presented in the previous section suggests that the maintenance of water quality in the natural environment ultimately requires a comprehensive approach to natural resource management. Such an approach will enable the integration and achievement of multiple management requirements which vary from broad scale such as Catchment Management Plans (CMP) to small scale such as the design of site specific stormwater disposal systems.

With reference to legislation, this comprehensive approach may be achieved by a specific Act for natural resource management, by the incorporation of environmental consideration in Acts relating to the management of water resources, or through the use of multiple Acts in combination. The latter requires a high level of agreement and cooperation between decision making authorities so that the use of their respective legislation is coordinated to achieve the desired management outcome.

Recent initiatives in other States of Australia and in some other countries provide examples of these approaches to the management of water quality through legislative controls. Some examples are discussed briefly in this section.

## 2.2 Australian legislation

### 2.2.1 New South Wales

The legislative framework relating to water management in New South Wales is described in detail in Cummings et al. (1995). Total Catchment Management (TCM) was adopted as Government policy in 1987 and was enacted by legislation in the Catchment Management Act, 1989.

This Act established a management hierarchy comprising a State Catchment Management Coordinating Committee, Catchment Management Committees, and Catchment Management Trusts, with powers to implement total catchment management of natural resources. The Act is administered by the Minister responsible for the Soil Conservation Act, 1938.

The objects of the Act are to:

- Co-ordinate policies, programs and activities as they relate to Total Catchment Management.
- Achieve active community participation in natural resource management.
- Identify and rectify natural resource degradation.
- Promote the sustainable use of natural resources.
- Provide stable and productive soil, high quality

water and protective and productive vegetation cover within each of the State's water catchments.

The State Catchment Management Coordinating Committee comprises 20 members representing a large number of Ministerial portfolios and related Government departments; and persons representing Local Authorities, individual Catchment Management Committees, and environmental and rural interests. The Government Agencies represented include those responsible for soil conservation, water administration, national parks and wildlife, environment, public works, forestry, lands and fisheries. As its name and membership suggests, the Committee is required to coordinate policies, programs and activities as they relate to total Catchment Management and in particular:

- To co-ordinate the implementation of total catchment management strategies.
- To monitor and evaluate the effectiveness of total management strategies.
- To advise the responsible Minister or other Ministers on any aspect related to total catchment management.
- To co-ordinate the functioning of Catchment Management Committees and to maintain liaison with Catchment Management Trusts.
- Such other functions relating to Total Catchment Management as are directed by the responsible Minister.

The Catchment Management Committees comprise representative of land holders in the particular Catchment Management Area, and representatives of environmental interests, Local Government Authorities, and local representatives of relevant Government departments. The functions of these committees are to:

- Promote and co-ordinate the implementation of total catchment management policies and programs.
- Advise on and co-ordinate the natural resource management activities of authorities, groups and individuals.
- Identify catchment needs and prepare strategies for implementation.
- Co-ordinate the preparation of programs for funding.
- Monitor, evaluate and report on progress and performance of total catchment management strategies and programs.



- Provide a forum for resolving natural resource conflicts and issues.
- Facilitate research into the cause, effect and resolution of natural resource issues.
- Such other functions relating to total catchment management as are directed by the Co-ordinating Committee.

The Catchment Management Trusts are corporations which are subject to the control and direction of the responsible Minister, and which have responsibility for the organisation and implementation of prescribed works within specific areas. Before establishing a Catchment Management Trust, the responsible Minister must have regard as to whether:

- The degradation of natural resources within the area concerned is adversely affecting the community.
- The land holders, land users and the community who utilise and derive benefit from those resources have a joint responsibility to deal with the degradation.
- The formation of a Trust is the most appropriate means of achieving equitable cost sharing.
- There is clear support by the land holders, land users and the community for the formation of a Trust.

The functions of Catchment Management Trusts are to:

- Provide, construct, operate, manage and maintain works and buildings.
- Purchase, exchange, take on hire or lease, hold, dispose of, manage, use or otherwise deal with real or personal property.
- Enter into contracts including consultancy contracts.
- Enter into cost sharing or other arrangements in connection with the carrying out of works.
- Generate revenue by levying and recovering catchment contributions.
- Provide assistance to mitigate the effects of flood, drought, fire or other emergency, including assistance with funds, personnel or equipment.
- Effect and maintain insurances.
- Exercise any other function prescribed by the regulations.
- Do anything incidental to the achievement of the purpose for which it was established.

A Catchment Management Trust may levy a catchment contribution on any land within a trust area to fund Catchment Management Programs approved by the Minister and there are provisions which enable such contributions to be collected by Local Authorities in association with rates and charges.

The New South Wales (NSW) Catchment Management

Act, 1989 therefore establishes a management structure with legislative powers which has the capacity to achieve environmental water quality objectives through initiatives such as WSUD. In essence, the Co-ordinating Committee may adopt WSUD as a policy, the Catchment Management Committees can determine the requirements for WSUD within their respective areas, and they or the Catchment Management Trusts may co-ordinate or undertake works designed to ensure water quality criteria are achieved. NSW also has established a Catchment Assessment Commission (CAC) to recommend to Government water quality standards. Government will decide on the trade-offs associated with implementing the CAC recommendations. The actions required to achieve water quality standards will then be set out in “valley strategic plans”.

The development of the valley strategic plans will be steered by a “Water Council of Chief Executives” (WCOCE) of the agencies having responsibilities associated with water. An Office of Water (OOW) has also been created to co-ordinate the development of water policies, strategic water management and to audit licences and agreements.

### 2.2.2 Victoria

In Victoria, the Water Act, 1989 has the following purposes which are relevant to water quality:

- To provide for the integrated management of all elements of the terrestrial phase of the water cycle.
- To make sure that water resources are conserved and properly managed for sustainable use for the benefit of present and future Victorians.
- To maximise community involvement in the making and implementation of arrangements relating to the use, conservation or management of water resources.
- To eliminate inconsistencies in the treatment of surface and groundwater resources and waterways.
- To provide a recourse for persons affected by administrative decisions.
- To provide formal means for the protection and enhancement of the environmental qualities of waterways and their in-stream uses.
- To provide for the protection of catchment conditions.

Waterways are defined to include rivers, creeks, streams, lakes, lagoons, swamps, and marshes and these may be specified by the Governor by order published in the Government Gazette. The powers of the Act may be conferred by the responsible Minister on various authorities or Local Government Councils. An Authority may be responsible for a Waterway Management District and has the following functions in relation to designated waterways and designated land or works within that district:



- To identify and plan for State and local community needs relating to the use and to the economic, social and environmental values of land and waterways.
- To develop and to implement effectively schemes for the use, protection and enhancement of land and waterways.
- To investigate, promote and research any matter related to its functions, powers and duties in relation to waterway management.
- To educate the public about any aspect of waterway management.

Designated waterways and land or works may be specified by the Authority in accordance with definitions provided in the Act.

The Authority is also required to perform its functions in an environmentally sound way and to participate, where possible, in forming and consulting with Catchment Co-ordination Groups and to act on the advice of such a group in performing its functions. A Catchment Co-ordination Group may consist of representatives of Authorities, public statutory bodies or Government departments that have responsible abilities for the management, use and protection of land or water in the area or that have planning functions in the area. Such a group must also include representatives of all relevant community interests.

The Act also provides that:

- A person other than a public statutory body must not, without the Authority's consent or any other authorisation under the Act, cause or permit works to be undertaken which interfere, or are likely to interfere, with designated land or works or the quality, quantity or flow of water in designated lands or works within an Authority's waterway management district.
- A public statutory body that intends to undertake works of the above type must, notify the Authority of its intention and take into account any comments made by the Authority. There is also a process in the Act for the settlement of disputes between an Authority and a public statutory body.

The responsible Minister also may:

- Cause assessment and investigations connected with water resources and the environment in connection with waterways to be undertaken.
- Cause schemes for the improved management of waterways, drainage and floodplains to be prepared and implemented.
- Develop public education programs for promoting broad community awareness of the role of waterway management authorities in the overall resource conservation and development in Victoria.

The Minister is required to appoint a community based committee to carry out such investigations and more than

half of the membership of such committees must consist of persons who are owners or occupiers of land in the affected area. Other committee members which are specified by the Act include representatives of any Council whose Municipal District is wholly or partly within the affected area, any public statutory body directly affected by the proposal, and all relevant interests including environmental interests.

A Water Management Scheme prepared by such a committee is advertised for public comment and after due consideration by the Minister and resolution of any applications to the Administrative Appeals Tribunal, may be declared an approved scheme. The Authority to which such a scheme applies must notify the Secretary for Planning and Environment and all responsible Authorities under the Planning and Environment Act, 1987 that are likely to be affected by the scheme and these Authorities in turn, must have regard to the provisions of the approved scheme. Finally, the Authority may impose fees or require contributions from other Authorities or Councils to fund the scheme.

As is the case in NSW, the Victorian Water Act, 1989 appears to have the powers which would enable the achievement of WSUD objectives through the protection of designated waterways, planning and environmental requirements as specified in a Water Management Scheme, and if necessary, the construction of drainage and other works with the costs met by appropriate levies and charges.

Victoria also has the Catchment and Land Protection Act, 1984. This Act established a Catchment and Land Protection Council which provides advice to the responsible Minister on:

- Matters relating to catchment management and land protection.
- The condition of the State's land and water resources.
- The Statewide priorities to be given to catchment management and land protection programs.

The Act also provides for the development of regional strategies and requires public authorities to be guided in their actions by such strategies.

The impact of stormwater on water quality with the Melbourne Metropolitan Area has been highlighted in Yarra State Environmental Protection Policy, Draft Yarra Catchment Strategy and Draft Port Phillip Catchment and Land Protection Regional Catchment Strategy (Melbourne Water and EPA, 1997). The EPA has appointed an Advisory Committee under its Act to develop a Stormwater Agreement between the EPA, Melbourne Water, and Local Government. The Advisory Committee will consider:

- Environmental performance to be achieved.
- Roles and responsibilities of the parties to the Agreement in achieving these outcomes including:
  - primary responsibility for elements of the



- drainage and waterway system from catchment to coast.
- roles associated with primary responsibility (including monitoring of performance and impacts).
- other agencies with responsibility and their roles.
- commitment of agencies to undertake specific actions/programs/etc. to achieve the objectives of the agreement.
- processes for interaction between agencies.
- Processes for resolving issues on the management of drainage quality.

### 2.2.3 Queensland

In Queensland, the Water Resources Act, 1989, allows the Commissioner to take steps to protect the water resources from anything that results in or is likely to result in a reduction in their quality (Bates, 1995).

The Queensland water resource management agency is the Department of Primary Industries (DPI). The Department coordinates the provision of urban water services provided by local Government and also controls major water supply infrastructure in rural areas.

The Department of Environment and Heritage also has pollution control responsibilities which are relevant to water quality management in Queensland. The Environment Act provides for policies to be established for specific areas of environmental concern and a draft environmental protection policy for water is nearing completion. This policy, if adopted, will require water management agencies to establish programs to develop water quality protection plans.

In parallel with the corporatisation proposals for Queensland, including some elements of Water Resources, it is proposed that the “non-commercial” elements of the various existing acts covering land, water and forest management be integrated in a new Natural Resources Management Act.

A discussion paper on this proposal has recently been released which suggests that water allocation management plans could replace the existing “incremental” approach to natural resource management through the licensing provisions of the current Water Resources Act, 1989. Such plans could include the water quality protection plans being sought by the Department of Environment.

### 2.2.4 South Australia

South Australia is currently considering a Water Resources Bill which would establish an Act to replace the Water Resources Act, 1990, the Catchment Water Management Act, 1985, and other Acts. The new Act would lead to the creation of a Water Resources Council and has, as its objectives, the establishment of a system for the use and management of water resources of the State:

- That ensures that the use and management of those

resources sustain the physical, economic and social well being of the people of the State and facilitate the economic development of the State while:

- ensuring that those resources are able to meet the reasonably foreseeable needs of future generations; and
- protecting the ecosystems (including their biological diversity) that depend on those resources.
- That, by requiring the use of caution and other safeguards, reduces to a minimum the detrimental effects of that use and management.

The potential Act would require the Minister, the Water Resources Council, Catchment Water Management Boards, Municipal and District Councils, the Court and all other bodies and persons involved in the administration of the Act to have regard amongst other things for the need:

- To maintain or improve the quality of naturally occurring water with resulting benefits to other natural resources of the State including the land and its soil, native vegetation and native animals.
- To protect water courses, lakes, surface and underground water from degradation and, where practical, to reverse degradation that has already occurred.
- To protect and enhance ecosystems that depend on naturally occurring water,
- To encourage members of the community to take an active part in planning the management of water resources and in managing those resources.
- To promote public awareness of the importance of the State’s water resources and the use and management of those resources in accordance with the Act.
- To integrate, as far as practicable, the administration of this Act and other legislation dealing with natural resources.

The proposed Act provides for the preparation and adoption of a State Water Plan the purpose of which is to set out policies for achieving the object of the Act throughout the State, and catchment water plans. The latter must include:

- Information of a kind prescribed by regulation as to the quantity and quality of the water comprising the water resources of the Board’s catchment area, and the health of the ecosystems that depend on that water.
- An assessment of the need for water of those ecosystems.
- An outline of the relevant economic, environmental and social considerations relating to the management of water resources in the Board’s catchment area.
- The Board’s goals in relation to water resource



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management in the Board's catchment area and an explanation of how the achievement of those goals will implement the object of the Act.

- A description of the methods the Board will use:
  - to assess the extent to which it has succeeded in implementing its plan;
  - to assess the extent to which implementation of its plan has succeeded in achieving the Board's goals;
  - to monitoring the quantity and quality of the water in its water resources and the health of the ecosystems on that water.
- The Board's program for implementing its plan including methods for improving the quality of water of the water resources in the catchment and the health of ecosystems that depend on that water.

The proposed act also provides for the control of activities which may be deemed to be contrary to a water plan applying in a specific area. Such activities include:

- Draining or discharging water directly or indirectly into a water course or lake.
- Any activity prescribed by regulations.

These powers would enable the responsible Minister and Catchment Water Management Boards to specify water quality discharge criteria through Catchment Water Management Plans applying to specific areas.

The Water Resources Council comprises five members including a person appointed with experience in the management of water resources appointed by the Minister, a nominee of the Local Government association, nominee of the Conservation Council of South Australia, a nominee of the South Australian Farmers Association Incorporated, and a member of a Catchment Water Management Board. The general functions of the Council are to examine and assess the extent to which the State Water Plan has been implemented and has achieved the object of the Act, the extent to which a particular Catchment Water Management Board has succeeded in implementing its Catchment Water Management Plan and the extent to which that implementation has achieved the object of the Act, and other matters.

In addition, the proposed Act would require each Municipal and District Council in the State to prepare a Local Water Management Plan which would specify the performance of functions and the exercise of powers by the Council under the Act and all other relevant Acts. Such plans would have to be consistent with Management Plans promulgated under other legislation such as the Environment Protection Act, 1993, Soil Conservation and Land Care Act, 1989, Coast Protection Act, 1972, and National Parks and Wildlife Act, 1972.

This provision presumably would enable Councils to require compliance with WSUD criteria.

There are also provisions which require Councils to contribute funds to Catchment Water Management Boards in accordance with the requirements of a Catchment Water Management Plan and as determined by the responsible Minister. The amount of such contributions is determined by formulae relating to rateable land. Therefore, it would appear that if a Catchment Water Management Plan specified the need to improve water quality discharges from existing urban areas, then Local Authorities could be required to implement such works either directly or indirectly through contributions to the Catchment Water Management Board.

## 2.3 Other countries

### 2.3.1 New Zealand

New Zealand has amalgamated the legislation covering planning, environmental protection and the management of natural resources into the Resource Management Act, 1991. The purpose of the Resource Management Act is to provide sustainable management of natural and physical resources (Cummings et al, 1995).

Sustainable management is defined as:

Managing the use, development, and protection of resources in a way, or a rate, which enables people and communities to provide for their social, economic, and cultural well-being and for their health and safety while:

- a) Sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and
- b) Safeguarding the life supporting capacity of air, water, soil and ecosystems; and
- c) Remedying or mitigating any adverse effects of activities on the environment.

The integration of the management of natural and physical resources is achieved through a decentralised and flexible system, with most management and allocation functions being delegated to regional and territorial councils. Water is treated as any other natural resource within that framework, although special provision is made for water quantity and quality issues and water conservation orders provide an extra level of attention.

Regional councils, to whom most of the management functions relating to water are assigned, have both the ability and the duty to manage the effects of all use and development within the region with a view to meeting specified management objectives for water and other natural and physical resources in the area.

The management of water under New Zealand's Resource Management Act is described in detail in Mascher (1996).



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### 2.3.2 Canada

Canada, like Australia, has three tiers of Government: federal, state and local. In most provinces the local level of Government includes town/city, municipal county and watershed authority jurisdictions. However, the Canadian Federal Government is able to play a more active role in water resources than in Australia (Cummings et al, 1995).

Water management in the province of Ontario has relevance to water management in Australia. The following precis is adapted from Cummings et al. (1995).

In the 1980s, water management reform in Ontario primarily focussed on water quality issues with amendments to the Ontario Water Resources Act, Environment Protection Act, and Pesticides Act. During the 1990s this focus was broadened to include a reconsideration of land use planning, the creation of a new water agency and a conservation strategy, the consideration of economic and environmental issues in farm planning, and modifications within existing ministries. Water quality continues to be a key issue.

An Advisory Committee on Environmental Standards was established in 1990 within the Ministry of Environment and Energy. This is an independent advisory body which advises the Minister on practical standards for environmental contaminants as well as policies, principles and procedures for setting environmental standards. Public consultation is an important feature of the committee's activities.

During the 1980s, significant dissatisfaction was voiced about the land use decision process; it was considered inefficient, expensive, complex, and did not ensure environmentally sound decisions. In response to reports from two Royal Commissions (Commission on Planning and Development Reform, Commission on the Future of the Toronto Waterfront), the Ministries of Natural Resources (MNR) and Environment and Energy (MOEE) issued in 1993 three separate guidelines: *Water Management on a Watershed Basis - An Ecosystem Approach*; *Integrating Water Management Objectives into Municipal Planning*; and *Subwatershed (Subcatchment) Planning*.

A new Planning Reform Bill was to be introduced following public comment on two documents released in May 1994. These documents suggest there will be sweeping change to Ontario's land use planning process. Proponents are likely to be required to show how their proposal will protect natural heritage, ecosystems, wetlands, and meet, hazard, economic, community development, infrastructure, housing, agricultural land, mineral aggregate, mineral and petroleum resources, and conservation policies. The Bill is likely to give municipalities greater control of the development process, to make it faster and more efficient.

### 2.3.3 United States

As a result of developments associated with the Clean Water Act, the United States has addressed the management of urban water quality through legislative and administrative arrangements that focus on stormwater.

The 1972 Federal Clean Water Act requires the development of area-based water quality management plans to control both point source and non-point sources of pollution. A system of stormwater permits (National Pollutant Discharge System) was established as a result of the 1987 Federal Clean Waters Act (Florida DEP, 1993; Diessner, undated).

The administration and legislative framework surrounding the management of stormwater and urban water quality in the states of Florida and Washington are useful models to consider.

#### 2.3.3.1 Florida

The following precis on stormwater management in Florida has been adapted from the Florida DEP (1993).

In order to meet the objectives of the Federal Clean Water Act, Florida drafted regulations to control stormwater, with the first State regulation adopted in 1979 and further modified in the early 1980s. Under the Stormwater Rule of 1982 a stormwater permit was required for all new stormwater discharges and for modifications to existing discharges if plans or pollutant loads increased.

An applicant for a stormwater discharge permit must provide reasonable assurance that stormwater discharges will not violate state water quality standards. The Stormwater Rule is based on design and performance standards due to the difficulty of determining the effect of any single facility on water and the potential number of discharge facilities.

Design criteria and performance standards are based on:

- Stormwater management goals (water quality and quantity, erosion and sediment control, water conservation, aesthetics and recreation),]
- Rainfall characteristics,
- Runoff pollutant loads,
- Effectiveness of various best management practices and associated cost data.

The adoption of best management practices (BMPs) is seen as the primary mechanism for achieving water quality standards. A BMP is defined as a control technique that is used for a given set of site conditions to achieve stormwater quality and quantity enhancement at a minimum cost. BMPs are documented in the Florida Development Manual: A Guide to Sound Land and Water Management (Livingston et al, 1993).

Following extensive public consultation the stormwater treatment objective was set at removing at least 80% of





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the average pollutant load to fishable and swimmable waters and 95% of the pollutant load to sensitive waters such as potable water supplies.

The Department of Environmental Protection serves as the umbrella administering agency. It delegates authority to five regional water management districts whose functions are management of water quantity, together with water quality management. A comprehensive approach to stormwater management throughout an entire watershed is required under the state Stormwater Rule and requires a coordinated team approach between the State, the water management districts and local Governments.

Both the Department's and District's stormwater rules essentially require a new development to include a comprehensive stormwater management system. The system should be viewed as a "BMP treatment train" in which a number of different BMPs are integrated into a comprehensive system that provides aesthetic and recreational amenities in addition to the traditional stormwater management objectives.

In 1993 the Florida Legislature, as part of the Environmental Reorganisation Act of 1993, modified parts of the Florida Statutes, combining wetland resource permitting and stormwater/surface water management permitting into an "Environmental Resource Permit" regulation. Implementation is shared by the Department of Environmental Protection and the water management districts, depending upon the type of activity which is being permitted. As part of this streamlining, a new unified stormwater/surface water management rule will increase consistency in stormwater management requirements

throughout the state.

Many local Governments with the State of Florida have adopted stormwater regulations. Local regulations must be consistent with State Water Policy and the state and water management district rules (Livingston et al, 1993). The local stormwater ordinance is a part of local Government's land development regulations. Several of the local Governments in the State of Florida have established stormwater utilities, enabled by state legislation, which provide a mechanism for collection of user pays fees.

#### **2.3.3.2 City of Bellevue, King County, Washington**

There are many parallels between stormwater management in the State of Florida and the State of Washington.

The City of Bellevue, Washington is recognised as a national leader in stormwater management. A Storm and Surface Water Utility was established in 1974 providing guaranteed funding and an integrated approach to urban stormwater was adopted. The Utility's mission is to manage the storm and surface water in Bellevue to maintain a hydrological balance, and protect water quality (Diessner, undated).

The Bellevue Surface and Stormwater Utility is involved in a number of programs including flooding and erosion control, water quality control, monitoring, regulating land use on environmentally sensitive lands, public education programs, inter-Governmental coordination and wetland acquisition programs.



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# 3. Legislative framework relating to water quality in Western Australia

## 3.1 Introduction

At present there is no specific legislation in Western Australia which requires developers of urban estates, or local authorities, to comply with WSUD criteria. There is, however, a large body of legislation which may provide the mechanisms for ensuring the adoption of BMPs. This legislation may be considered in three general categories as follows:

- legislation which provides for the planning and implementation of land use controls,
- legislation which provides for the control of pollution, and
- legislation which provides for the protection of natural resources.

Each of these categories of legislation is discussed below.

## 3.2 Legislation which enables planning and land use controls

### 3.2.1 Planning legislation

This category of legislation enables relevant authorities to control land use allocation through zonings and other mechanisms and to apply conditions on approvals for subdivisions. Controls on land use may be used to ensure that the siting of urban areas corresponds with locations where the potential for water pollution is naturally low, or where it may be effectively managed in terms of urban design and cost requirements. This could be achieved for example through the integration of region plans which are currently prepared by the West Australian Planning Commission (WAPC), with catchment management plans which could be prepared by the Water and Rivers Commission, or integration with environmental protection criteria relating to groundwater and surface water quality.

Similarly, conditions on approvals for subdivisions may specify drainage works and discharge water quality criteria.

The principal Acts in this category comprise:

- Town Planning and Development Act, 1928,
- Metropolitan Region Planning Act, 1959,
- Western Australian Planning Commission Act, 1985
- Local Government Act, 1995,
- Planning Legislation Amendment Act, 1996

The first two of these Acts enable the WAPC to prepare region plans for areas outside the Perth Metropolitan Region, and corridor plans within the Perth Metropolitan

Region. The Acts also enable the WAPC to ensure that individual Town Planning Schemes prepared by local authorities comply with the region and corridor plans through the approval or non-approval of rezoning applications.

Local government authorities are responsible for town planning, the administration of local government town planning schemes, and for ensuring that appropriate land use, development and planning controls exist within their areas of jurisdiction. Town planning schemes must give consideration to relevant Statements of Planning Policies issued by the WAPC under the provisions of the Town Planning and Development Act, 1928, and with Town Planning Regulations, 1967.

The above Acts do not specifically require the responsible authorities to ensure that the allocation of land for urban purposes, or that the design of urban estates, comply with BMPs of WSUD. The adoption of BMPs is more a matter of non-statutory policies of the responsible agencies. In this respect, the WAPC has made reference to WSUD in various documents, including Metroplan, Regional Land Use Strategies, Structure Plans and Planning Policies.

For example, Policy DC 6.3 which is entitled “Planning Considerations for Sources of Public Water Supply and Sensitive Water Resource Areas”, is intended to ensure that water resources are given adequate consideration in planning decisions within the Metropolitan Region. This policy applies to both surface and groundwater reserves, and has as its objectives:

- Avoidance of development that will unacceptably diminish the quality and quantity of water resources and unacceptably modify the ecosystem;
- Ensuring that subdivisional designs and servicing arrangements make provision for water conservation, avoid pollution, minimise changes to the water balance and minimise destruction of wetlands; and
- Heightening of awareness amongst planners, developers and public authorities of the need to plan for water conservation.

Policy DC 6.3 requires the WAPC to have regard to the policies of the Water & Rivers Commission for water resource protection and management and to advice from the Commission and the EPA on the application of the policy to water resource protection, including wetlands and waterways.

Similarly, the Jandakot Land Use and Water Management Strategy, developed to protect the Jandakot groundwater



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mound, incorporates water quality considerations. The WA Planning Commission's Statement of Planning Policy No 3 also aims to prevent forms of development which could prejudice the long-term use of groundwater, and to identify land uses which may be compatible with sustainable use of groundwater resources.

A draft Community Code also has been prepared to direct community and suburban development in Western Australia. The draft code addresses among other issues, environmental constraints facing planning and development, including the issue of drainage in urban areas. Once adopted, the Community Code will form a statutory policy under the Town Planning and Development Act, 1928. The Community Codes emphasise WSUD (the use of nutrient stripping, swales, and incorporation of drainage in Public Open Space (POS) etc.) and will provide an incentive of up to 3% of the 10% POS requirement for the adoption of WSUD.

Despite these statutory and non-statutory measures to protect water quality, the planning process has been criticised for "internalising the trade-off of water resource quality against potential land development" (Welker, 1995). Similarly, the degree to which water quality considerations are taken up by the land use allocation portfolio is seen to be at the discretion of the land use planning agency (Welker, 1995).

### 3.2.2 Environmental legislation

The Environmental Protection Authority (EPA) also has powers to affect the planning approval process through the Planning Legislation Amendment Act, 1996. This Act enables the EPA to assess all statutory plans, including Town Planning Schemes, Redevelopment Schemes, Regional Planning Schemes, and also Statements of Planning Policies.

In theory, this legislation could be used by the EPA to ensure that Region Plans and Town Planning Schemes are consistent with catchment management plans or other schemes for land use allocation based on the principle of maintaining water quality. The design of BMPs in specific urban areas, however, would be less readily controlled through this legislation which operates at the rezoning level, but could be possible through the associated provisions for formal assessment of rezoning applications.

### 3.3 Legislation which enables the control of pollution

The EPA may use provisions of the Environmental Protection Act, 1986, to control and regulate pollution, and therefore may require discharges from urban estates to comply with water quality criteria. At present, however, this is only possible if the urban development has been formally assessed and specific Ministerial conditions are made which apply to water quality. Alternatively, an Environmental Protection Policy promulgated under the Act could specify water quality discharge criteria for

specific locations.

The Department of Environmental Protection (DEP) has delegated to the WRC pollution control powers relating to the management of contamination of surface and underground waters. A similar delegation has been made to the waterways management authorities for waters in their management areas (Welker, 1995). These powers however, tend to have been used to manage contamination from point sources such as individual industries, rather than diffuse urban sources, where a large number of households may be contributing to and collectively causing pollution.

### 3.4 Legislation which provides for the protection of natural resources

Various legislation provides for the protection of natural resources in Western Australia, either generally or with reference to specific locations. The Environmental Protection Act, 1986, enables the EPA to assess proposals which may affect the environment and enables the Minister for Environment to reject or place conditions on such proposals. This Act also enables the EPA to control pollution. These powers have been referred to above.

Under the provisions of the Environmental Protection Act, 1986, the Minister for Environment may also promulgate Environmental Protection Policies (EPP). An EPP may declare the beneficial uses of the environment to be protected, set indicators to measure environmental quality and specify standards for achieving environmental quality objectives (Gardner, 1996). EPPs of relevance to the management of urban water quality include:

- Draft Environmental Protection (Gnangara Mound Private Land Groundwater) Policy, 1992. This draft policy aims to protect the Gnangara Mound groundwater supplies which occur under private land from pollution.
- Environmental Protection (Swan Coastal Plain Lakes) Policy, 1992. This policy protects lakes and wetlands identified in the policy from unauthorised filling, mining, effluent discharge into or drainage into or out of the wetland.
- Environmental Protection (Gnangara Mound Crown Land) Policy, 1992, which controls land use within the policy area with the aim of protecting the Gnangara groundwater mound from adverse effects.
- Environmental Protection (Peel Inlet-Harvey Estuary) Policy 1992.
- Draft Environmental Protection (Swan & Canning Rivers) Policy, 1995.

The Conservation and Land Management Act, 1984, also provides the National Parks and Nature Conservation Authority (NPNCA) with powers for the management of conservation reserves and national parks. These powers may allow the NPNCA to control discharges to wetlands within such reserves.



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Various acts relating to water management also provide the Water and Rivers Commission to indirectly influence land use planning decisions which may affect natural resources and water quality. The statutory processes required to achieve this, however, may involve the planning and environmental protection legislation. The Waterways Conservation Act 1976 enables the establishment of Waterways Management Authorities.

### 3.4.5 Water legislation

The institutional structure relating to water resources in Western Australia was significantly reformed on 1 January 1996 by the separation of the regulatory and utility aspects of water resource management, supply, sewerage and drainage to the Co-ordinator of Water Services (regulatory body), the Water & Rivers Commission (resource manager) and the Water Corporation (the utility body). The functions of the former Waterways Commission have been incorporated into the Water and Rivers Commission.

The Water and Rivers Commission has the responsibility to:

- a) Make and administer by-laws for the protection of water resources in water catchment areas (both surface and groundwater) or water reserves (Metropolitan Water Supply, Sewerage & Drainage Act, 1909, Country Area Water Supply Act, 1947). This includes the six Underground Water Pollution Control Areas in the metropolitan area.
- b) Provide the arterial drainage framework for surface drainage in the Perth Metropolitan Region (Metropolitan Water Authority Act, 1982).
- c) Administer laws related to the use of surface and groundwaters (Rights in Water & Irrigation Act, 1914).
- d) The conservation of rivers, inlets and estuaries (Waterways Conservation Act, 1976) through Waterways Management Authorities.
- e) Various other functions including the development of water resource policy, assessment and planning for the use of water resources, flood management, and promotion of the efficient use of water resources (Water & Rivers Commission Act, 1996) (Gardner, 1996).

It is widely recognised that the legislation relating to water law is confusing, with repetition, and overlap between the various statutes relating to water supply, water rights, irrigation, drainage and sewerage in the State (Bartlett, 1995). An attempt was made to consolidate and reform water law with the Water Bill of 1990. However, this legislation has not been enacted.

Despite the range of legislation relating to water resources in Western Australia, there is no statutory basis for effective water resource planning, (Ventris, 1995; Gardner, 1995). The Water and Rivers Commission currently undertakes water resource planning as a six stage hierarchical process involving strategic water resource planning, regional water allocation planning, regional water development planning, strategic public source planning, management area planning and management of use. However, these plans have no legislative status to enforce planning requirements for water resources (Ventris, 1995).

Similarly, the former Water Authority and the Water and Rivers Commission have developed a range of policies for the protection and exploitation of groundwater and surface water, including allocation strategies and environmental principles, impact on water quality, Local Government also has responsibilities under the Local Government Act, 1995 to manage water reserves, and drains, and crown and foreshore reserves vested in the local authority (Land Act, 1933).

Table 1 provides a summary of water resource management in Western Australia



**Table 1: Summary of Water Resource Management in Western Australia**

<b>Water Resources Manager</b>	<b>Area of Responsibility</b>	<b>Enabling Statutory Mechanisms</b>
Water & Rivers Commission	<p>Metropolitan arterial drain</p> <p>Public Water Supply Area Underground Water Pollution Control Area</p> <p>Proclaimed water catchments (metro) Proclaimed water reserves (metro)</p> <p>Proclaimed water catchments (country) Proclaimed water reserves (country) Groundwater Management Area Surface Water Mgmt Area</p> <p>Crown Reserves (water) where vested in WAWA</p> <p>Waterways (estuaries, Inlets, Rivers) Peel Inlet Management Auth. Leschenault Inlet Management Auth</p> <p>Swan River</p>	<p>Metro Water Authority Act</p> <p>MWSS &amp; D Act &amp; by-laws Metro Water Authority Act Water Authority Act</p> <p>MWSS &amp; D Act &amp; by-laws Metro Water Authority Act Water Authority Act</p> <p>CAWA Act and by-laws Water Authority Act</p> <p>Rights in Water and Irrigation Act &amp; by-laws</p> <p>Land Act</p> <p>Waterways Conservation Act</p> <p>Swan River Trust Act.</p>
Water Corporation	<p>Metropolitan Main Drains Metropolitan Sewage</p> <p>Irrigation District Drainage District (country) Country towns sewage</p>	<p>MWSS &amp; D Act &amp; by-laws MWSS &amp; D Act &amp; by-laws Metro Water Auth. Act Water Authority Act</p> <p>Water Authority Act Land Drainage Act CTS Act, Water Auth. Act &amp; by-laws</p>
Department of Environmental Protection (EPA)	<p>Peel Inlet - Harvey Estuary Gnangara Mound (crown land) Swan Coastal Plain Wetlands</p> <p>Pollution Control (most water aspects delegated to WAWA)</p> <p>Environmental Impact Assessment</p>	<p>Envt. Protection Policy under Protection Act</p> <p>Envt. Protection Act Parts V &amp; VI</p> <p>Envt. Protection Act</p>
Ministry for Planning	<p>Land subject to town planning schemes</p> <p>Metropolitan Region Scheme Sewer condition on subdivision</p>	<p>Town Planning &amp; Development Act Planning Legislation Amendment Act</p> <p>MR Town Planning Scheme Act Town Planning and Development Act</p>
Local Authority	<p>Water Reserves, Drains, Bridges. Crown Reserves and foreshore reserves (vested in Local Auth.) Sewage in towns</p>	<p>Local Government Act Land Act Land Act Health Act</p>
Department of Land Administration	<p>Crown Reserves (unvested) including forestry reserves Vacant crown land</p>	<p>Land Act</p>



<b>Water Resources Manager</b>	<b>Area of Responsibility</b>	<b>Enabling Statutory Mechanisms</b>
Conservation and Land Management	State Forest, National Parks, Nature Reserves	Conservation and Land Management Act
Department of Minerals and Energy	Exploratory leases, mining leases right to extract water	Mines subject to Rights in Water & Irrigation Act.
Landowner/ Occupier	Alienated land and sometimes crown and being occupied	Rights in Water and Irrigation Act MWSS & D Act, CAWS Acts, Water Authority Act, Env't. Protection Act.
Agriculture WA	Clearing of vegetation > 1 ha in size Drainage of saline water	Soil & Land Conservation Act

MWSS & D Act = Metropolitan Water Supply Sewage and Drainage

CAWS = Country Area Water Supply Act

CTS = Country Towns Sewage Act

MR Town Planning Scheme = Metropolitan Region Town Planning Scheme Act

Adapted from: Whelans Halpern Glick Maunsell Pty Ltd (1992) Water Sensitive Design Guidelines Working Paper No 2 Analysis of Relevant Statutory Procedures. Report to the Water Authority of Western Australia



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## 4. Discussion

### 4.1 The legislative framework

The maintenance of water quality requires close integration of land management and environmental protection legislation and initiatives. The major causes of poor water quality of urban discharges are often diffuse or non-point sources, and the control of these sources requires modifications to land management practices. For this reason, the overall effectiveness of water quality management will depend on the successful integration of water resource management, land use allocation, catchment and land management and environmental protection functions at the strategic, regional and local level (Welker, 1995).

Regional and local Town Planning Schemes, Statements of Planning Policy, Environmental Protection Policies, and management plans and programs of the Waterways Management Authorities and Department of Conservation and Land Management (CALM) and the Department of Agriculture therefore can all provide some measure of conservation, use and protection of water resources, in addition to that provided by more specific water legislation (Gardner, 1995).

The Western Australian legislation relating to water resource management (including management of water quality) is dated and complex in its diversity and associated administrative procedures. Previous attempts to undertake water law reform (for example the Water Law Bill, 1990) have been unsuccessful. The current legislation is particularly lacking in the absence of a statutory basis for water resource planning. The preparation of water resource plans at various levels is one requirement of the BMPs of WSUD. While water resource management plans are prepared by Water and Rivers Commission, the absence of a statutory basis to the plans limits the Commission's ability to influence integrated land planning processes (Gardner, 1996).

Similarly, Catchment Management Plans (CMPs) have no statutory basis. CMPs are being prepared in agricultural areas and in a limited number of urban areas. Progress with the preparation of CMPs varies with the landcare groups or Land Conservation Districts Committees. The relationship between CMPs, district and local structure plans (non-statutory) and district and local Town Planning Schemes is still unclear (Taskforce, 1996).

The planning legislation has a significant role in the management of water quality in urban areas. Land use, which has a major impact on water quality, is prescribed through Town Planning Schemes. The Community Codes currently being drafted will be adopted as a statutory policy under the Town Planning & Development Act, 1928. The Community Codes emphasise WSUD (nutrient stripping, swales, incorporation of drainage in POS, etc.) and will provide an incentive (up to 3% credit in the 10% POS

requirement) for the adoption of WSUD.

At the regional planning level, WSUD is recognised in non-statutory mechanisms (e.g. Development Control Policy 6.3, Metroplan, etc).

The environmental protection legislation also has a significant role in the maintenance of water quality in urban areas of Western Australia, through the prevention of pollution, the assessment of Town Planning Schemes and through Environmental Protection Policies. For example, the draft Environmental Protection Policy for the Swan and Canning Rivers specifically requires the Ministry for Planning and the Swan River Trust to ensure that BMPs, including WSUD principles, are adopted for new urban developments to reduce pollutants (Part 6, 45, 65).

The EPA also has a role in determining the environmental impact of land uses and developments prescribed under the Town Planning Schemes. The recent Planning Legislation Amendment Act, 1996 requires all statutory plans (i.e. Town Planning Schemes, redevelopment schemes, regional schemes, and Statements of Planning Policy) to be assessed by the EPA. The EPA will consider the environmental impact of a scheme or amendment and may require an environmental review of the scheme to be undertaken before it is advertised. The environmental review must be advertised with the scheme. The Minister for the Environment may require environmental conditions to be incorporated into Town Planning Schemes to prescribe the types of land use or development that are permitted.

The above summary indicates that to date, various Government Agencies are pursuing largely separate initiatives designed to improve the water quality of urban stormwater according to their statutory powers and limits. There is a real need however, for integration of these initiatives either within the existing legislation framework or through the amendments of relevant Acts, or the promulgation of a new Act with specific functions and powers.

It also is apparent that the legislative and administrative framework relating to stormwater management and water quality that operates in Western Australia differs markedly from that operating in other parts of Australia and overseas. NSW and Victoria are specific Acts providing powers which enable control of water quality and South Australia is considering a similar Act. In Queensland, Canada and New Zealand, legislative reform is aimed at integrating planning and natural resource management, while in the United States the impact of stormwater on water quality is recognised in legislative and administrative arrangements.



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Legislative reform of the Western Australia water law is currently being examined by the Centre for Commercial and Resources Law and the Water and Rivers Commission. Western Australia's obligations under the COAG Agreement on water reform also requires greater integration and the adoption of integrated catchment management.

## 4.2 Water quality criteria for urban stormwater

The primary objective of the present initiative of the Water & Rivers Commission, of which this report is a part, is to provide for the adoption of BMPs for WSUD in order to achieve acceptable water quality in urban stormwater discharge to receiving surface and groundwaters. The criteria for water quality related to such discharges may vary for different geographic areas and different receiving waters. To take account of this, existing and proposed legislation in other States of Australia and other countries cited in this report, generally provide for the definition of catchment areas or designated waterways. Such frameworks for the development of criteria also are relevant for Western Australia where diverse water resources are involved with different management priorities.

To some extent, the EPA has moved in this direction through the promulgation of Environmental Protection Policies for specific areas which may be used as a mechanism for establishing discharge criteria. There has not been however, a systematic approach to the development of criteria which eventually could be applied to urban developments throughout the State although the Swan Coastal Plain Wetlands Environmental Protection Policy (EPP) could be used to partly achieve this objective. Similar EPPs could be developed for other geographic areas or more particularly for specific catchment in which urban development has occurred or may occur in the future.

The WAPC through the development of community codes also is providing the basis for incorporating BMPs in new subdivisions within the Perth Metropolitan Region. Again, this initiative could be extended to all urban areas through the incorporation of equivalent policy in Town Planning Schemes (TPS).

Overall, the requirement is to investigate the potential of expanding the use of these legislative means to achieve a co-ordinated and comprehensive approach to WSUD.

## 4.3 Enforcement

A mix of compliance mechanisms has been shown to be most effective (Young et al, 1996) in achieving land use reform. For example, regulatory and incentive mechanisms are currently used to ensure the retention of remnant vegetation in agricultural areas of Western

Australia. Possible regulatory and non-regulatory mechanisms are shown in Table 2.

Incentive mechanisms to encourage adoption of BMPs in water quality include credit for POS (included in the draft Community Codes) and the level of assessment of the project by the EPA. Other possible incentives include financial and technical assistance to Local Government Authorities to develop stormwater management plans in association with the Water & Rivers Commission. This is similar to the recent incentives in Victoria where a Stormwater Agreement has been signed between the Victorian EPA, Melbourne Water and the Municipal Association of Victoria and Local Government Authorities are provided with financial assistance to prepare stormwater plans (A. Roy, 1997; Melbourne Water and EPA, 1997).

The enforcement of BMPs for WSUD requires the application of legislation both to new proposals and to existing urban areas.

Enforcement for new proposals would appear to be relatively straightforward under the provisions of the Environmental Protection Act, 1986 and the various planning Acts in association with environmental protection and planning policies as discussed above. Effectively, these Acts provide mechanisms for imposing conditions on subdivision approvals.

In the case of existing urban areas, Local Authorities are responsible for stormwater management and discharge. In this case, the retrospective application of legislation is likely to be difficult and is not required. Rather, requirements for improving drainage schemes so that they include BMPs, could be achieved through the preparation of Catchment Management Plans or some other form of plan such as a Stormwater Plan which specifies the priorities for water quality in a particular area, the methods and timelines for achieving water quality targets, and the means of financing necessary works to achieve those targets.

The legislation from other States which has been reviewed in the present report, suggests that a specific body should have responsibility for co-ordinating such plans and that Local Authorities and communities should be involved closely with the development of such plans. The methods of funding used in other States include rates and charges imposed by Local Authorities selectively according to catchment improvement needs, and community grants from Government where appropriate.

At this stage, it is suggested that a Water Quality Co-ordinating Committee (WQCC) could be given the responsibility for setting policy and ensuring coordination across agencies within the area of stormwater quality and to prepare a strategy for the legislative management of stormwater quality.





**Table 2: Possible Compliance Mechanisms for Environmental Management  
(after Young et al, 1996)**

MECHANISM	EXAMPLES
Tax Policy	<ul style="list-style-type: none"> <li>• accelerated depreciation</li> <li>• exemption from local Government rates</li> <li>• exemption from capital gains tax</li> <li>• deductibility of non-income producing expenditure</li> <li>• donations</li> </ul>
Charges	<ul style="list-style-type: none"> <li>• tourist levies</li> <li>• entry charges</li> <li>• royalties</li> <li>• user fees</li> <li>• hypothecation</li> </ul>
Financial Programs	<ul style="list-style-type: none"> <li>• management</li> <li>• grants</li> <li>• compensation payments</li> <li>• access to free advice</li> <li>• subsidies</li> <li>• rate rebates</li> </ul>
Property Rights	<ul style="list-style-type: none"> <li>• tradeable quotas</li> <li>• tradeable fishing shares</li> <li>• development rights</li> <li>• offset schemes</li> <li>• tradeable clearing rights</li> <li>• tradeable drainage rights</li> <li>• tradeable easements</li> <li>• easements &amp; covenants</li> <li>• exclusive use rights</li> </ul>
Leases & Licenses	<ul style="list-style-type: none"> <li>• harvest licenses</li> <li>• breeding licenses</li> <li>• export permit</li> <li>• conditional resource security</li> <li>• bio-prospecting</li> </ul>
Enforcement	<ul style="list-style-type: none"> <li>• fines</li> <li>• forfeiture of rights</li> <li>• director liability</li> <li>• audit</li> <li>• state of the environment reporting</li> </ul>
Bonds & Deposits	<ul style="list-style-type: none"> <li>• security deposits</li> <li>• conditional resource security</li> <li>• assurance bonds</li> </ul>
Regulations	<ul style="list-style-type: none"> <li>• harvesting permits</li> <li>• collecting permits</li> <li>• clearing permits</li> <li>• development zones</li> <li>• precautionary standards</li> <li>• precautionary regulations</li> </ul>
Accreditation Schemes	<ul style="list-style-type: none"> <li>• special status agreements</li> <li>• labelling</li> <li>• industry accreditation</li> <li>• prizes</li> <li>• self regulation</li> </ul>
Empowerment	<ul style="list-style-type: none"> <li>• third party rights to challenge decisions</li> <li>• rights to access information</li> <li>• co-management</li> </ul>
Institutional Mechanisms	<ul style="list-style-type: none"> <li>• international agreements</li> <li>• State agreements</li> </ul>
Information	<ul style="list-style-type: none"> <li>• education</li> <li>• extension</li> <li>• research</li> <li>• monitoring</li> </ul>
Leverage Mechanisms	<ul style="list-style-type: none"> <li>• cross compliance</li> <li>• conditional grant</li> </ul>
Award	<ul style="list-style-type: none"> <li>• awards &amp; prizes</li> </ul>



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# 6 Recommendations

It is recommended that:

An attempt be made to achieve the general adoption of Best Management Practices for Water Sensitive Urban Design through use of existing legislation rather than through the development of an Act with specific purposes and powers as has occurred in some other States of Australia.

This recommendation is made on the basis that the adoption of a new Act is likely to be difficult and time consuming, and the fact that existing legislation would appear to provide specific mechanisms for the achievement of the primary objective.

It is also recommended that:

The Government establish a Stormwater Quality Co-ordinating Committee to co-ordinate the WSUD initiative.

The functions of the Stormwater Quality Coordinating Committee should be to set policy and ensure coordination across agencies within the area of stormwater quality. It is suggested the Stormwater Quality Coordinating Committee be directed by Government, through the joint Ministers of Water, Environment, Planning and Local Government, to prepare a strategy for the legislative management of stormwater quality which would include as appropriate such matters as the identification of priority management areas, water quality criteria, criteria for BMPs, indicators against which performance can be measured, responsibilities and a time frame for the implementation of the strategy, and other matters which the Ministers may jointly determine.

The Stormwater Quality Coordinating Committee should comprise at least representatives of the Ministry for Planning, Water & Rivers Commission, Water Corporation, Department of Environmental Protection, Local Government Authorities and interest groups, including the Urban Development Institute of Australia. The members should operate at a senior level and be able to influence policy and decisions and bring about organisational change.

The Stormwater Quality Coordinating Committee also should be supported by a Working Group from the relevant agencies and interest groups, including the Water & Rivers Commission, Water Corporation, Department of Environment, Ministry for Planning, WA Municipal Association and the Urban Development Institute of Australia. The Working Group would provide briefing papers that identify issues, current impediments, opportunities, programs, resources and responsibilities relating to stormwater quality in response to working briefs developed by the Stormwater Quality Coordinating Committee. The Stormwater Quality Coordinating Committee would then brief their respective Ministers.

This two tiered approach to the Stormwater Quality Coordinating Committee is similar to the approach adopted by the Road Safety Council, which also involves several government Ministers, their associated agencies and interest groups. The proposed model would ensure coordination across agencies, as well as government support for the implementation of stormwater quality in urban areas.

Finally, it is recommended that:

The progress of the implementation of the strategy be reviewed after a period of approximately three years, and if significant progress has not been made towards the general adoption of BMPs, that consideration again be given to the introduction of specific legislation designed to better achieve this objective.

Initiatives which could be considered by the Storm Water Quality Co-ordinating Committee include the following:

- Establishment of a formal protocol between the Ministry for Planning and the Water and Rivers Commission, requiring Water and Rivers Commission input and consent in the development of water management conditions for regional schemes, town planning schemes, structure plans and the assessment of subdivision applications.
- Establishment of a formal Agreement between Water & Rivers Commission, EPA and the WA Municipal Association dealing with the management of stormwater quality.
- Ensure the use of WSUD principles and practices is recognised in the Community Codes currently being prepared as a statutory policy under the Town Planning & Development Act, 1928.
- Co-operate with and assist the Western Australian Planning Commission to develop a Statement of Planning Policy that recognises and adopts WSUD principles and practices. The Statement of Planning Policy may be based on the current non-statutory Policy DC6.3. A Statement of Planning Policy would require all Town Planning Schemes to consider WSUD.
- Encouraging the EPA to consider Water Sensitive Urban Design (WSUD) when assessing Town Planning Schemes, Region Plans, amendments of each of these, and Statements of Planning Policy and by the attachment of conditions requiring the Water & Rivers Commission to give approval to conditions.
- Requests to the EPA to finalise the Environmental Protection Policy on the Swan Canning River.
- Requesting the Western Australian Planning Commission to identify regional open space



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through structure planning procedures for the purpose of drainage and water management.

- Encouraging Local Authorities to require Water Sensitive Urban Design BMPs in development applications.
- Encourage Local Government Authorities to develop stormwater management plans through financial incentives and technical assistance.
- Consider the use of incentive mechanisms such as credits for Public Open Space requirements to encourage the adoption of BMPs.
- Investigation of mechanisms to integrate land use planning with catchment planning.



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