State Sustainability Strategy

Submission from the Department of Environment, Water and Catchment Protection*

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* While the Department of Environment, Water and Catchment Protection has yet to be formed officially, the term will be used as an amalgamation of the Department of Environment Protection (including the EPA Service Unit) and the Water and Rivers Commission (including the Swan River Trust). Where relevant, EPA in the terms of powers, duties and functions will also be included.

1.0 EXECUTIVE SUMMARY

The major opportunity which lies before the State government is to move to a sustainable future and thereby realize the ecological, social and economic benefits for all Western Australians.

The Department of Environment, Water and Catchment Protection (DEWCP) believes that it has the responsibility, accountability and capacity to make a major contribution to this goal. Our vision and mission statements reflect this belief.

DEWCP's Vision Statement:

A healthy environment and sustainable use of natural resources for the benefit of present and future generations.

DEWCP's Mission Statement:

To lead the protection and enhancement of the State's natural capital, working in partnership with the community. We achieve this through managing and influencing peoples attitudes and behaviors towards the environment and natural resources.

This submission provides a framework within which government and DEWCP's contribution may be seen, as well as identifying past and current best practice examples. In summary the key areas of action for DEWCP are:

a) developing Natural Resource Management and Reporting Systems through State of the Environment Reporting;
b) management of state air quality;
c) implementing a holistic approach to waste management;
d) and, management of the State's water resources.

2.0 INTRODUCTION

2.1 Why Hasn't Sustainability Become Fully Operational?

Sustainability, whether described as sustainable development, ecologically sustainable development or other variations is not a new concept. It has its global genesis at least back to the 1972 United Nations Conference on the Human Environment in Stockholm, with that Conference drawing upon earlier national and international trends. Sustainability's history since 1972 is well known, with milestones such as the Bruntland Report (1987), the United Nations Conference on the Environment and Development(UNCED) in Rio de Janeiro in 1992. UNCED produced the Rio Declaration and Agenda 21, amongt other instruments, and in Australia provided the impetus to develop and produce, the National Strategy for Ecologically Sustainable Development (1992).

Given this level of interest and commitment, why is it now, Rio plus 10 years, that developed countries still struggle to make sustainability fully operational? If we are to succeed in the future, we need to understand the reasons behind the lack of achievement in the past.

Table 1 provides an overview of some of the key factors that need to be addressed if we are to make sustainability a reality in WA. This simple analysis shows a number of opportunities for the State Sustainability Strategy to learn from the past.

Factor	Past	Future
Leadership from government.	Paucity of articulated policy statement. No clear champion.	Clear policy commitment and a dedicated team.
Setting WA in national and global context.	Similarities, differences and special needs not explored. Exchanges with like jurisdictions for mutual learning not undertaken systematically.	State Sustainability Strategy (SSS) has opportunity to address this factor.
An overall plan for implementation involving the community.	No plan.	Clear opportunity for SSS. Plan needs to be evolutionary not revolutionary and be pitched at a number of timeframes. (e.g. 2 years, 5 years, 10 years, 30 years).
Identification of specific responsibilities and accountabilities for implementation.	Responsibilities and accountabilities not identified.	Critical opportunity for SSS.
Forging specific partnerships with sectoral and special interest groups.	Not done systematically or on a priority basis in government.	Opportunity for SSS.
Driving institutional reforms in government including mechanism for continuous reinforcement and improvement.	Institutional reforms not systematic and coordinated (although some good outcomes achieved).	Opportunity in SSS to achieve consistency and effectiveness.
(Independent) Performance evaluation and public reporting of government performance.	Sporadic and uncoordinated.	Opportunity in SSS to achieve consistency and effectiveness. (independent performance evaluation would enhance creditability of results).
Government-led behavioral change programs for the community.	Some excellent individual examples but generally poorly resourced and not systematic in approach nor set against priorities.	Opportunity in implementing SSS.
Feedback mechanisms for community behavioral change.	Sporadic and uncoordinated.	Opportunity in implementing SSS.

Table 1: Seizing opportunities to achieve operational sustainability in W.A.

2.2 Sustainability And Governance

It is clear that market forces alone are not able to deliver sustainability. While the move to triple bottom line reporting by responsible corporations is a significant and necessary step, it is not sufficient on its own. It is equally clear that governments in developed countries with participatory democratic systems are reluctant to regulate for sustainability even if it were possible or achievable. Communities need direction, help, support and feedback to play their part. A Government partnership approach is clearly indicated.

In the evolutionary change to sustainability, identification of roles and responsibilities between participating sectors of society need identification and agreement.

As a starting point, Table 2 describes what DEWCP believes are important and relevant roles and responsibilities of Government, Business and the Community.

Sector	**Roles and Responsibilities**
Government	1. Leadership and good governance. 2. Policy framework. 3. Plan developed with the community. 4. Provide for (independent) performance evaluation and public reporting. 5. Providing incentives for sustainable practices 6. Forge partnerships; take and respond to initiatives. 7. Examples promoted of sustainability in practice 8. Institutional reform including an appropriate measure of legislation and regulation following full community debate 9. Capacity building within and outside government. 10. Resourcing sufficient at least to support government actions.
Business	1. Embrace and pursue triple bottom line public reporting (noting that this in itself is not necessarily a measure of sustainability). 2. Pursue the objectives of sustainable industry practice. 3. Peak industry groups to pursue a leadership role in their business sector, 4. Consider socially responsible investment 5. Implement green offsets for sustainable development. 6. Commit to sustainability as a proper part of doing business.
Community	1. Recognize and act on the need for behavioural change by all members of society as the key to long term success. Sustainability ultimately is about the aggregated influence and outcomes from millions of everyday decisions by everyday people in everyday lives. 2. Pursue opportunities to play a role in community leadership to achieve sustainability. 3. Contribute to and respond to good practice guidance. 4. Consider “ethical investments.” 5. Look for opportunities in volunteer, sustainability – based community activities.

Table 2: Roles and Responsibilities for sustainability.

3.0 SUSTAINABILITY AND DEWCP

DEWCP, with the EPA is responsible for ensuring delivery on the State's environmental bottom-line.

3.1 Relationship To Sustainability Principles

For the purpose of this submission, DEWCP has identified the following key principles of sustainability relevant to its core business (Table 3).

Principle	**DEWCP Responsibility**
Sustainable management of natural resources	Quantity and quality of water resources, air quality
Maintaining the integrity of ecological systems and biodiversity	Rivers, Estuaries, Catchments, Wetlands, Native Vegetation, Oceans, advisory function in EIA, EPPs, licensing of emissions (stressors)
Taking a precautionary approach where science is lacking	Water and air resource allocation, development approvals, policy
Intra and Inter-generational equity	Water and air allocation, natural resource management, development approvals
Transparency and community involvement in decision making (governance)	All policy formulation, allocation and EIA fully transparent
Understanding natural resources and their inter-relationships	Investigation, monitoring and review
Understanding human impact on natural resources	Education
Equitable sharing of natural resources between competing uses	Social, economic and environmental allocation

Table 3: Sustainability principles and DEWCP.

In operationalizing these sustainability principles, DEWCP recognizes the need for a consistent framework in guiding, managing, evaluating and reporting on natural resources and the environment. By its very nature this will include:

- ensuring future development is on an sustainable basis;
- ensuring policies, programs and plans incorporate sustainability principles;
- managing natural resources sustainably;
- ensuring private and public sector use of natural resources is on a sustainable basis;
- addressing existing and past unsustainable practices;
- and, undertaking (via an independent EPA) performance evaluation and public reporting using the various instruments at DEWCP's disposal.

3.2 DEWCP's Current Responsibilities As The Relate to Sustainability

The range of responsibilities relevant to sustainability include these, where services are provided to the EPA.

- Environmental Impact Assessment
- Assessment of Natural Resource Environmental Management Outcomes
- Environmental Protection Policies
- State of the Environment Reporting
- Broad NRM Policy Development
- Scientific Advice
- Water Resource Allocation and Management
- Environmental Regulation
    - Licensing
    - Contaminated Sites
    - Waste Management
- Contribution to Catchment and Natural Resource Management
    - Water Quality and Conservation
    - Air
    - Wetlands
    - Rivers and Estuaries
    - Marine and Coastal Waters
    - Forest
    - Salinity
- Research and Development

3.3 Priority Actions Of DEWCP In Sustainability

3.3.1 Salinity

Why Is Salinity A Priority Issue?

Salinity is the greatest environmental threat facing Western Australia – 1.8 million hectares in the South West agricultural region are already affected by salinity to some extent. Projections show that without rapid, large-scale intervention, including significant changes to current land use practices, about three million hectares will be affected by 2010-2015 and six million hectares, or 30% of the region, will be affected by the time a new groundwater equilibrium is reached.

The area of salt-affected land has already had a serious impact on biodiversity, current and future water supplies, agriculture and regional infrastructure, including roads, rail, water and wastewater facilities, public and private buildings, and, of course, people.

Existing Barriers To Sustainability

Although the mechanics of the salinisation process are known, there is no magic solution that can be used in all situations. New high water using farming systems and crops need to be developed as most of the current systems cannot cope with the rising water table. Engineering systems have a place, but there are few that have proved successful over a period of time or fully understood technically. Consequently, there needs to be more research performed.

Farmers need to continue to make a living, and consequently they are looking for economic solutions. Land managers may choose to ignore sustainable farming practices and just purchase more land, or they may accept the need for better land management. Their capacity, ability and desire to implement sustainable practices varies greatly.

Current Strategies To Address Salinity

The current options to managing salinity are included in the Salinity Strategy (March 2000). These include improving land management practices to use more water (eg high water using crops and pastures, commercial farm forestry, changing farming systems, summer cropping, etc), using saline lands productively, managing and retaining native vegetation and constructing engineering options (surface water and groundwater options). The department will ensure that relevant management decisions that are made in the futureare consistent with this strategy.

New Strategies And Approaches Needed

The greatest need is to identify new economic farming systems and crops that help restore the natural water balance. Land managers want to feel confident in solutions that have been tried and work. This will require research, development and extension in new crops and pastures, and also research into engineering solutions and their applicability in given conditions.

Market based solutions in the form of incentives, levies that encourage environmental responsible behavior is another area that is young, but developing.

Improved information transfer. Greater access to satellite imagery and the potential to model high risk areas can enable farmers to concentrate their effort on high priority areas.

Legislative Base for Managing Salinity

There are a number of pieces of legislation that cover degradation of the environment. To date however, correcting the evolving salinity issue has not generally been addressed through legislation, although clearing controls for water catchments were introduced in 1976/78 and through the recent Environmental Protection Act (1986) amendments, clearing controls have been tightened. Some institutional arrangements, such as Land Conservation District Committees, rely on legislation. Deep drainage and other major works require notification or assessment under various acts.

3.3.2 River and Estuaries

Why is River and Estuaries Management a Priority Issue?

Waterways across the state are undergoing significant degradation. Impacts range from algal blooms to loss of fringing vegetation to erosion of river channels and sedimentation of seasonal river pools. Waterways reflect the symptoms of activities occurring within catchments. Most management strategies have focused on addressing these symptoms, but have not considered the causes of the situation. Waterways are integrally linked to catchment processes and without recognition of this, we will continue to treat causes with limited success.

Estuaries are the receiving water bodies for catchments via river networks and their fates are intertwined. Environmental and human health are also closely related. The majority of Western Australia's population distributed along the coast live either on, or close to, an estuary. The estuaries themselves are highly impacted both from the population pressures acting in close proximity to the estuary, and by the flow on effects of agricultural catchments which drain into these estuaries. The Swan Canning, Peel Harvey, Leschenault, Vasse Wonnerup and the Albany Harbours are all impacted by both urban and agricultural contaminants.

In agricultural areas habitat destruction, land salinisation and water abstraction have reduced water quality over large areas. In some instances, these effects have been exacerbated by waste-water and mine discharges. The current usage patterns for many of our rivers and estuaries is clearly unsustainable. As such, more often we are seeing declining water quality and habitat values.

Existing Barriers To Sustainability

The management of waterways has been largely an ad hoc process across all levels of government with poorly defined roles and responsibilities. For example, there exists no statewide estuarine management framework, although a statewide framework for all waterways is being developed through the Waterways Western Australia Program.

Waterways management response in the past has been focused on a few significant environmental issues such as toxic algal blooms. Although issues such as algal blooms can threaten social, economic and environmental values, they largely occur in the receiving water bodies at the base of catchments, the estuaries. Focus needs to be readdressed to the causes and not just on these symptoms.

The Western Australian community needs to make a deliberate effort to consider our attitudes and behaviours towards the State's water resources, their use and their management. We need to instigate a true commitment to change through a catchment focus, true community participation and involvement in decision making and a shift in community values.

We also need to make decisions which acknowledge the complex and dynamic nature of the landscape and its temporal and spatial scales of variability. We need to recognise that the state's waterways, their form, nature and biodiversity is the result of millenniums of evolution. The current pressures we are putting on our waterways will inevitably trigger a response that we are unlikely to be able to predict due to the scale and rate of pressures being put on these waterways.

There is no single agency or group responsible for waterways management in the state. Responsibilities are extended across all levels of government and the community. As such, a major impediment in attaining sustainable management of catchments and the contained rivers is the short term nature of most initiatives and the absence of a committed whole of government approach including local governments. Effective change in the Natural Resource Management field requires consistency of effort and personal (who are or become part of the community) and generation length commitments.

In both DEWCP's review of the state of rivers and estuaries and across the State and the management needs and through participation in the NLWRA it has become clear that the environmental values of both rivers and estuaries are poorly understood by the general community and undervalued as a consequence. Our scientific understanding of the functioning of these ecosystems and their response to human impact is itself poor, especially north of the South West. The environmental services provided by river-estuary systems are poorly articulated partly reflecting our scientific ignorance, paucity of resources directed to this understanding, and the lack of individuals with the necessary expertise and drive.

Current River and Estuaries Management Strategies

Waterways Western Australia Framework incorporating the State Algal Bloom Management Strategy will establish key priorities, principles for

waterways management and framework for waterways management across W.A.

Statewide Waterways Management Needs Assessment is a methodology developed by the Commission as a means of developing priority groupings of waterways across the state based on an assessment of their condition, pressures, values and level of management response. Two hundred and eight waterways have been put through a trial of this process and a report released.

Incorporation of sustainable river and estuarine management in regional strategies. Development and promotion of river and estuarine environmental values in such strategy frameworks.

Implementation of the Swan-Canning Environmental Protection Policy and the Swan Canning Cleanup Program which incorporates both catchment and estuarine actions with a strong focus on community involvement.

Implementation of Geocatch as a major river restoration and catchment management initiative .

Commencement of Watershed Torbay whole of catchment restoration program. Completion of Wilson Inlet Action plan focused on sustainable agriculture in the catchment and sustainable use of the inlet.

Rivercare program is jointly funded through NHT and state funds and provides technical advise to groups undertaking river restoration activities. This work is done in the context of understanding catchment processes that are occurring to trigger the issue being addressed.

Development of methodology to determine Environmental Flow Requirements (EWR) methodologies and implementation through Environmental Water Provision (EWP)

On a small scale the community based Ord Land Water Management Strategy is moving towards regional scale initiatives. DEWCP has made significant progress in promoting sustainable water use not only in the irrigated regions but also across pastoral leases and with indigenous landholders.

Development of State of Water Resource Reporting through web based condition assessment utilizing all available river chemical and physical data. Information is now available to many.

Continued investigation of human induced impacts on rivers and estuaries to develop process understanding so that in turn effective intervention strategies can be highlighted.

Completion of the River Restoration Manual, that defines Western Australian solutions to restoration issues.

New Strategies and Approaches

The current focus of regional natural resource management (NRM) planning is the development of community based regional strategies, through which exist many opportunities to implement sustainability. Most communities identify healthy and productive catchments and good water quality environmental values that can be passed on to the next generation . Clearly the impetus for sustainable NRM is already present if we can articulate this is terms meaningful to the community.

Waterways management is well placed in connection to catchment management to promote and implement sustainable natural resource management.

Long term and clearly articulated whole of government commitment to sustainable management of rivers and estuaries can be employed through partnerships with the regional NRM groups, in combination with legislative tools and regulatory penalties. A major opportunity now exists through involvement with the National Action Plan and the second phase of NHT to implement large scale improvements however access to these funds depends on the availability of matching funding to leverage both the commonwealth funding and community participation.

The existing legislative base for water and estuarine management is currently being reviewed to identify opportunities within existing legislation to achieve better waterways management and to identify gaps that may need to be addressed by enhancing or new legislation.

Scientific Understanding

In the last 8 years we have advanced our understanding of estuarine processes in response to nutrient and organic loading, most notably in the Swan Canning and Wilson Inlet. We have also improved our understanding of the catchment drivers of river condition. A definitive measure of river condition for WA is lacking despite considerable effort to adapt the AusRivas methodology which for various reasons is not suitable to WA fauna. Good process understanding is critical to good decision making and in particular the link between catchment land use and river water quality. The transport and transfer of contaminants from catchment to stream, the transformations that occur within the streams, enroute to the estuary, are poorly understood.

New catchment management tools have been developed to incorporate process understanding with land use activities that communities can be involved in decision making.

3.3.3 Water Resource Allocation & Management

Why is Water Resource Allocation & Management is a Priority Issue?

Sustainability is not an end point, but something to continuously strive for. It cannot be determined in advance of water resource development, but can be determined incrementally as development proceeds whilst recognising that each water resource is unique.

The current water shortage has highlighted the need for Western Australia to improve water conservation and management, particularly with indications of a prolonged drying cycle. DEWCP, the Office of Water Regulation and water service providers (especially the Water Corporation) all have roles in promoting water conservation and management. These and other Government Departments and enterprises will have to work with stakeholders and water users to improve state-wide water conservation. This is essential to prepare for sustainable future state development in which water is one of the greatest limiting factors.

Current Water Resource Allocation & Management Strategies

DEWCP has initiated the development of a State Water Conservation Strategy to take advantage of the opportunity for improvements in water management generated by the current drought situation. Through this, long term improvements in water management will result.

The strategy will identify the major constraints and opportunities for effective water conservation, and make recommendations to achieve change within these opportunities. This strategy will impact on the operation of a number of Government departments and enterprises to implement a more efficient approach to water resource management.

The objectives of the strategy include:

1. To support the objectives of the DEWCP and the WA Government in the sustainable use of the State's water resources.
2. To identify any gaps in the regulatory and non-regulatory framework in WA, which may create barriers to the adoption of water conservation and water use efficiency in the urban, industrial and irrigated agriculture sectors.
3. To develop a strategy including actions with identified responsibilities that can allow a structured and sustained improvement of water conservation and water use efficiency in WA.

4. To identify where improved co-ordination between Government agencies and where an integrated consideration of different aspects of the water cycle may be required to increase the implementation of water conservation and water use efficiency.

Targets will be set for things such as per capita consumption, water use efficiencies in irrigated agriculture, adoption of in-house water conservation measures and use of wastewater and stormwater in appropriate parts of WA.

The Strategy will provide direction for initiatives in water conservation and sustainability for a number of years to come. The recommendations may have significant implications for the way that water resource development and supply is managed in Western Australia in the future.

Existing Barriers To Sustainability

Water service providers often have more resources but less incentive to reduce consumption by users, especially those paying a premium for high water use. Similarly, users of 'free' surface and groundwater need incentives and guidance from resource managers to improve their water conservation. This strategy will clarify the roles and responsibilities of each of these bodies and link water conservation with other initiatives (eg, energy conservation, urban planning, state sustainability strategy, consumer protection).

New Strategies And Approaches Needed

Surface Water And Groundwater Actions:

- Implementing appropriate investigative and monitoring programs to understand the resource from a hydrological, environmental, socio-cultural and economic perspective.
- Understanding the use of the resource by monitoring trends in its allocation and use.
- Establishing Water Resource Management Committees to assist Government in managing water resources.
- Developing Water Resource Management Plans to ensure sustainable outcomes.
- Water allocation planning to balance social, economic and environmental values.
- Develop community support for decisions which achieve sustainability but which may constrain development.
- Develop broad community understanding and support for water allocation policy and practices for the achievement of sustainability, including ownership and recognition that this may constrain development.
- Government, community and industry need to recognise that water is a cornerstone of achieving sustainable outcomes.

3.3.4 Wetlands Management

Why Is Wetlands Management A Priority Issue?

There has been significant loss and degradation of wetlands occurring over many of years. On the Swan Coastal Plain 80% of wetlands have been lost or degraded since European settlement and they are continuing to be lost and degraded. Recent assessment of wetland loss in the Perth metropolitan area highlighted a significant rate of loss due to development impacts for those Conservation Category Wetlands (those which retain high ecological values) without any form of current protection. Over many other areas of the State there is insufficient knowledge of the full extent of wetland areas and condition to properly understand the loss which is likely to be occurring in those regions.

Existing Barriers To Sustainability

- Lack of protection of the conservation category wetlands where they are well mapped on the Swan Coastal Plain either through legislation such as EPPs or through conservation reserves;
- particular problem with clearing of vegetated wetland types such as sumplands, damplands and palusplains;
- lack of community awareness and recognition of what a wetland is, their values and their loss;
- lack of knowledge of all wetland locations and values in many areas of the State;
- insufficient representation of all major wetland types and key wildlife habitats in conservation reserves;
- lack of certainty in our capacity to maintain, in viable wild populations the species and genetic diversity of wetland dependent flora and fauna; and,
- lack of certainty in our capacity to maintain the abundance of waterbird populations, particularly migratory species.

Current Strategies

Significant steps are currently being made to protect conservation category wetlands on the Swan Coastal Plain. The Minister for Environment and Heritage is undertaking consultation on the Revised Environmental Protection (Swan Coastal Plain Wetlands) Policy. The proposed EP Act amendments through Environmental Harm will makes it an offence to clear wetlands without approval.

The other issues/ barriers highlighted above are specifically addressed by the 62 action items listed in the ***Wetlands Conservation Policy for Western Australia.*** The State Wetland Coordinating Committee, chaired by CALM, has been set up to implement the policy. The committee has commenced on a

number of priority issues through the establishment of a number of working groups to specifically address certain areas. For example, mapping, classification and evaluation in other areas of the state, monitoring of wetland loss, wetland buffer guidelines and a manual to help wetland managers and the community understand, restore and manage wetlands. DEWCP plays a key role in most of these projects.

New Strategies And Approaches Needed

The strategies and approaches needed have been identified in the ***Wetlands Conservation Policy for Western Australia*** and are being progressed through its implementation.

The Existing Legislative Base

- The *Environmental Protection Act 1986*:
- part 3 enables the development of Environmental Protection Policies
- part 4 enables the EPA to assess proposals which have the potential to have a significant environmental impact.
- New legislative changes will make it an offence to cause environmental harm

- The ***Water and Rivers Commission Act*** provides the Water and Rivers Commission with the powers to manage the States water resources, including wetlands

- The ***Conservation and Land Management Act 1984*** allows for the protection and management of public lands and waters and their flora and fauna.

- The ***Wildlife Conservation Act 1950*** enables the conservation of the States indigenous flora and fauna.

- The ***Town Planning and Development Act 1928*** enables the development of Statement of planning Polices, town planning schemes and special controls through tools such as special control areas and planning control areas. These planning mechanisms can be utilised to protect wetlands. Recently a test case established that clearing of a wetland could be regarded as development and a company and individual were successfully prosecuted for clearing a wetland without appropriate approval under this legislation.

- Nationally the ***Environment Protection and Biodiversity Conservation Act 1999*** and international agreements, such as the Ramsar convention and the JAMBA and CAMBA agreements, are important to the protection of wetlands and wetland species.

Scientific Understanding

Detailed wetland mapping, classification and evaluation such as that completed for the Swan Coastal Plain and done to a preliminary level in some other areas of the state such as the South coast and Pilbara.

Wetland monitoring programs such as the detailed monitoring of water quantity, water quality and fauna and flora on the Gnangara and Jandakot mounds.

Survey work such as that being undertaken for wheatbelt wetlands as part of the State Salinity Strategy.

Research work such as that contained in the *Wetlands of the Swan Coastal Plain* series.

Policy Framework

The policy framework is provided by the *Wetlands Conservation Policy for Western Australia*. Through this policy the Government "is committed to identifying, maintaining and managing the State's wetland resource, including the full range of wetland values, for the long term benefit of Western Australia". In making the commitment there are 5 principal objectives and a strategy for implementation which includes 62 action items. The agencies with primary responsibility for implementation are listed against each action item.

The policy allows for the establishment of the Wetlands Coordinating Committee (WCC) which includes CALM, WRC, DEP, DPI, AgWA, local government, two representatives of the voluntary conservation movement with specific knowledge about wetlands and a non government wetland scientist. The role of the committee is to coordinate the implementation of the policy and the activities of relevant agencies with respect to wetlands.

As outlined above, the WCC has identified the priority action items and commenced work on these. Several working groups have been established and are currently addressing specific issues.

3.3.5 Marine and Coastal Management

Why Is Marine And Coastal Management A Priority Issue?

The State's coastal and marine waters are important community assets. Over 90% of the State's population lives within 20kms of the coast. Urban and industrial development in WA generally has a coastal focus and shipping ports are associated with most of these coastal developments. Commercial fishing

of wild stocks is an important industry and aquaculture is expanding rapidly. Petroleum exploration and production activity is high and focussed on the offshore waters of the North West Shelf and the Timor Sea. Domestic recreation has a strong marine focus with fishing a popular recreational pastime. Nature based tourism servicing both for the domestic and international market is growing.

Much of our coastline is largely undeveloped and in a relatively pristine state. However, some areas are developing rapidly and in need of careful management to ensure their values are not adversely affected while others are under considerable threat of cumulative impact or have become degraded or irreversibly damaged and require more urgent or remedial action.

Managing for sustainability is not the responsibility of one agency or group - it is a collective responsibility of government, industry and the general community. It must recognise and explicitly address the issues of cumulative impacts and intergenerational equity. It relies on trust and a common and agreed set of environmental quality objectives to guide sectoral management. It is important these objectives are considered at the earliest possible stage in the planning of proposals that have the potential to directly or indirectly impact on environmental quality. In this way, decision making is more straightforward, environmental safeguards are put in place ***a priori***, and monitoring/management feedbacks are linked to agreed environmental objectives.

What Are The Current Barriers To Sustainability?

Western Australia has over 12,500 km of coastline spanning a range of climatic zones, from temperate on the south and lower west coast, through tropical semi-arid on the northwest coast to monsoonal in the north. Tides range from about 1 m in the south to 10 m in the north. Coastal waters on the south and west coast are generally nutrient poor and very clear whereas inshore waters along the northwest and northern coast contain higher suspended sediment loads and are more turbid. The continental shelf is over 100 km wide along the Pilbara coast (the Northwest Shelf). The Leeuwin Current flows southward along the continental shelf break in winter, maintaining relatively high seawater temperatures and providing a mechanism to transport tropical species into temperate waters. The current also prevents significant 'up-welling' of nutrient-rich waters from the deep ocean that sustains the highly productive anchovy/sardine fisheries off the west coast of South America and South Africa. This physical setting has produced a wide variety of ecosystem types with many unique features. For example:

- Extensive arid-zone mangrove communities (Pilbara coast)
- A 270 km long fringing coral reef less than 6 km offshore (Ningaloo Reef)

- An inverse-estuarine ecosystem maintained by 20,000 km^2 of seagrass meadows (Shark Bay)
- An extensive high latitude coral reef complex (Abrolhos Islands)
- Nutrient-poor coastal lagoons/embayments protected by limestone reefs and characterised by highly diverse and endemic seagrass flora (central west and south coasts)
- Nutrient-poor high energy coast with granite reefs and cliffs and highly diverse and endemic floral and faunal assemblages (lower west and south coasts)

The many unique features of Western Australia's marine environment pose a challenge to sustainability because traditional management methods developed for overseas ecosystems are often not appropriate for our conditions. To achieve sustainability, management must be underpinned by a sound understanding of our ecosystems and the effects of human induced pressures on the structure of these systems, and on the key ecological processes that sustain them. This in turn relies on a fundamental understanding of the key ecological processes that sustain the system naturally and the identification and understanding of key threat-response pathways for each combination of activity and ecosystem type.

What Are The Current Strategies?

The State Water Quality Management Strategy is being developed to protect and enhance the quality of our water resources while maintaining economic and social development. This Strategy is underpinned by the National Water Quality Management Strategy (NWQMS) and relies on defining Environmental Values and specific Environmental Quality Objectives through consultation with the community. Environmental Quality Criteria are established as benchmarks from which Environmental Quality can be judged. This Environmental Quality Management Framework has been developed by the DEP and implemented for Cockburn Sound via the draft Cockburn Sound Environmental Protection Policy.

Contaminants can come from a range of human-derived sources as well as natural sources. The human derived sources enter the marine environment via point source discharges such as pipelines and drains and from diffuse sources like groundwater and air. Management responses should focus on the causes and not the symptoms of problems to be most effective so it is important to keep up-to-date inventories of the types and sources of contaminants that could threaten the quality of our waters. A generic inventory of contaminant sources to coastal waters has been established by the DEP. This inventory has been completed for the metropolitan coastal waters to the south of Perth, including Cockburn Sound and is currently being completed for the Northwest Shelf region between Exmouth and Port Headland.

Over-exploitation of our natural biological resources will compromise sustainability. A key feature of our coastal waters is the diversity of fishes and which supports well developed commercial and recreational fisheries. These fisheries are mainly coastal and have been developed under conditions of low productivity compared to western shores of other continents in the southern hemisphere. Many of the target species are demersal and rely on specific habitats (eg coral reefs, mangroves, algal reefs) that are limited in number and extent. This scenario leads to the possibility of overexploitation that could compromise the sustainability of these fish stocks and other interdependent non-target species and their habitats. The sustainability of export fisheries is being assessed to ensure they are managed in an ecologically sustainable manner. Fish Habitat Protection Areas are being established to complement fisheries management plans and strategies.

A fundamental requirement of environmental management for sustainability is knowledge of the how the natural environment functions and varies naturally, and how it responds to human induced pressure. The W A Government has established a strategic marine research fund to support a collaborative partnership between State Government Agencies, Commonwealth and local research institutions to underpin the sustainable management of WA's marine environment. It is envisaged that key outputs of this Fund will be the establishment of key baseline reference sites to understand natural variability and separate natural from human-induced change.

Even with the best understanding of an ecosystem and of the consequences of a particular human activity, there is always a risk that something that was unlikely or unforseen will occur and damage part of the environment and the biodiversity it contains. To offer the best chance of preserving all components of our marine biodiversity in perpetuity, it will be important to ensure the establishment of a comprehensive and representative system of secure marine protected areas. In the interim, areas of high conservation significance must be identified and protected from threatening activities.

- The State Water Quality Management Strategy is being developed for implementing the National Water Quality Management Strategy in Western Australia.
- An environmental quality management framework, that utilises Environmental Quality Objectives and management triggers, has been developed for the marine waters of the State.
- The Environmental Values and Environmental Quality Objectives of Cockburn Sound are being formally established through the Cockburn Sound Environmental Protection Policy
- Environmental Quality Criteria have been developed as benchmarks to assess to what extent the Objectives are met and Values protected, and to trigger management action where they are currently not met.

- The Cockburn Sound Management Council has been established to facilitate the multiple-use and sustainable management of the marine waters of Cockburn Sound to ensure the objectives of the CSEPP are met.
- A marine benthic primary producer habitat protection policy is being developed to help protect ecological integrity and the dependent biodiversity of our coastal waters.
- Contaminant Input Inventories are being developed for Cockburn Sound and the North West Shelf region to identify pressures and threats to the Environmental Values and inform management.
- Multi-disciplinary environmental studies are being conducted to facilitate multiple use management and protection of the marine ecosystems on the North West Shelf.
- A strategic marine research fund has been established to support a collaborative partnership between State Government Agencies, commonwealth and local research institutions to underpin the sustainable management of WA's marine environment.
- A representative system of marine reserves, to facilitate conservation and multiple-use management is being established by CALM.
- Fish habitat protection areas are being established by FWA.
- The Swan Canning Cleanup Program.

What New Strategies Are Required?

Progressively identify the Environmental Values and designate Environmental Quality Objectives for all of the State's aquatic ecosystems.

Obtain the scientific understanding to derive Environmental Quality Criteria for all of the State's aquatic ecosystems to act as benchmarks to assess where the objectives are met or not met and management action is required.

Ensure environmental monitoring programs are undertaken to directly assess environmental quality against the relevant criteria and determine the 'state' of the environment. Monitoring of the hidden indirect impacts is essential.

Information on the state of the environment, and management actions being undertaken, should be made publicly available in a format that is readily understood by all.

The principles of Best Management Practice and Continuous Improvement should be reinforced and promoted for existing activities and be required to be demonstrated for all new proposals.

The potential for cumulative impacts and synergistic effects of multiple activities should be recognised and considered in environmental impact assessments of new proposals and in the management of ongoing activities.

Downstream consequences of activities should be explicitly considered and actively managed to ensure Environmental Values of downstream environments are not compromised.

Document the extent, health and natural variability of marine benthic communities.

Maintain inventories of human-induced losses/gains of habitat and dependent biota to inform management.

Environmental management and regulation should continue to strive to maintain the natural values and maximise potential uses of the environment for current and future generations.

Core Objectives For Sustainability

- Ecological integrity of our aquatic ecosystems, and the habitats and communities dependent upon them, is protected and maintained.
- The quality of the State's water resources is protected and enhanced while maintaining economic and social development.
- Environmental values of all our water resources are identified through community consultative processes.
- Environmental Quality Objectives are designated and spatially-defined through statutory processes to provide common goals for management and protect the community-derived Environmental Values.
- Development proposals and activities that could impact upon water resources are planned and conducted such that the designated Environmental Values are not compromised.
- Waste discharges to water bodies are avoided and minimised to the maximum practicable extent.

3.3.6 Waste Management

Why Waste Management Is A Priority Issue?

In the year 2001, Perth's estimated population of 1.4 million disposed of 2.3 million tonnes of waste to landfill, which is the equivalent of 1.6 tonnes per capita (Figure 1). The annual cost to discard over 1 million tonnes of construction and demolition wastes alone is over $10 million. Sustainability is about the wise use, not wasteful disposal, of resources for economic, environmental and social benefit.

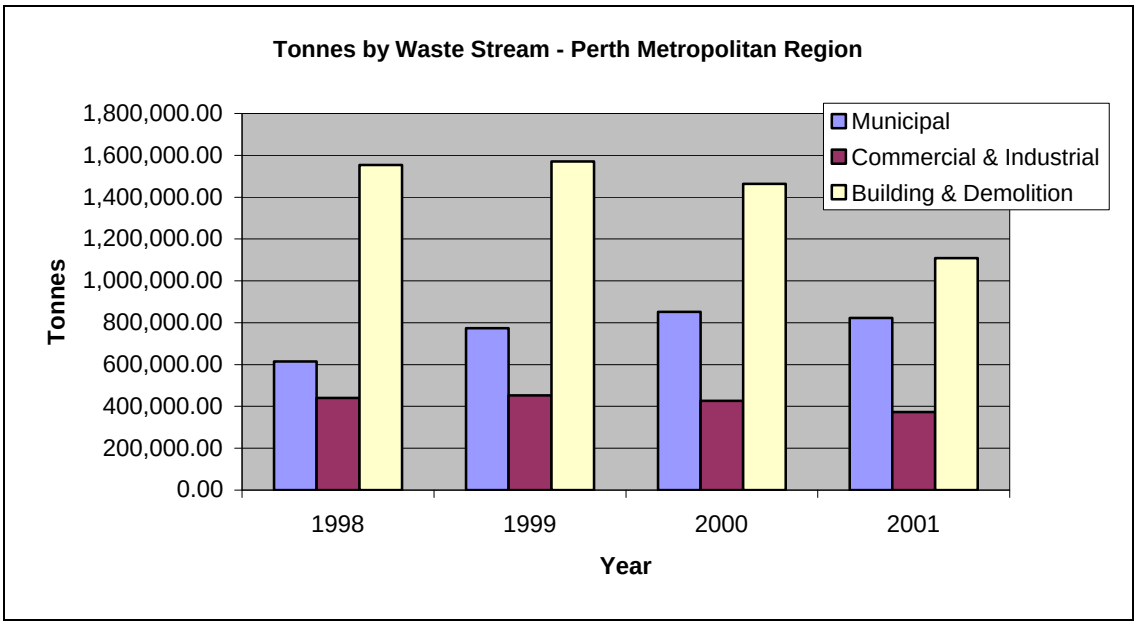

Figure 1: Annual tonnes of waste, by stream, for the Perth metropolitan region.

Western Australians need to maximize resource use and minimise the amount being disposed of – whether the resource be material, chemical, water or energy. The preferred hierarchy for use of resources is depicted in Figure 2.

Figure 2: Waste management hierarchy.

When disposed of to landfill, wastes from all waste streams impact upon the principles of sustainability. Following are some considerations/impacts relating to the three prongs of sustainability - economic, environmental and social:

- best economic returns are achieved if the use of materials and energy is avoided, or minimised as much as possible – for a typical product or service, 70% of the cost of development, manufacture/implementation and use is determined in the design phase (Environment Australia, April 2002. "Product Innovation: The Green Advantage");
- emissions from landfill sites contribute to greenhouse gases;
- leachates from landfill sites have the potential to pollute ground and surface water supplies;
- landfill sites require financing, and take space – part of man's 'ecological footprint on the land';
- biota is affected, either directly through clearing of land or indirectly through emissions and leachates, by waste disposed of to landfill;
- community members are affected with respect to siting of facilities (aesthetic and health issues) and hold growing concerns about the lack of sustainability of current disposal practices; and
- following the closure of landfill sites, the community's potential use of land is limited.

What Are The Existing Barriers To Sustainability?

In summary, existing barriers are pricing and market operation, lack of information, inertia, and resistance to change.

Prices of goods and services do not reflect their full environmental, social and economic costs to the community. As a consequence, cheaply priced virgin materials are used in preference to recycled materials, and recycling operations find it difficult to establish economically viable operations. In addition, the market effectively subsidises virgin materials in preference to reused and recycled materials. This is compounded by the relatively low landfill charges that effectively subsidise disposal.

Quantities of waste management flows are inadequately recorded/documented. Whilst some data exists (see science section), there is a lack of comprehensive waste management data. This was highlighted during the *Review of the State Recycling Blueprint* (November 2001). Cost-benefit or life cycle analyses have not been undertaken. Data and analyses are important benchmarks upon which to base policies and strategies, but there is currently no capacity to rectify this shortcoming.

Inertia is caused in part by the fixed asset base, both for landfill sites and recycling facilities. In addition, the legislation is not state-of-the-art, and is fragmented, with the potential to lead to lack of co-ordination (see section below on legislative base).

Resistance to change is fuelled by existing sunk capital, costs that will be incurred to implement changes and/or the need for new infrastructure, and community concerns, which require education to overcome.

Current Strategies For Waste Management

Key strategies include:

- WAste 2020: Towards Zero Waste (January 2001), which outlines the recommendations that the WAste 2020 TaskForce believe will lead the State towards achieving the vision of zero waste. The vision is based on five interdependent goals of sustainability, commitment (of all stakeholders), prevention of waste generation, resource recovery and integration of frameworks and structures to manage wastes.
- The WAste 2020 TaskForce also produced Action Plans for seven sectors, namely, Construction and Demolition, Packaging, Problematic Waste, Commercial and Industrial, Green and Organic, Municipal, and Controlled Waste. The Action Plans all require implementation strategies (see new strategies section below).
- Western Australian Cleaner Production Statement (May 2001), produced through the WA Sustainable Industry Group (WA SIG), which is a partnership of industry, academia and government. Signatories develop Action Plans detailing commitments to promote and adopt cleaner production and sustainability principles. DEWCP 's own Action Plan has been submitted to and accepted by WA SIG. It outlines initiatives to deal with wise resource use at the 'front of the pipe' rather than having to deal with waste problems. The initiatives cover internal operations, and, through the way we 'do our business', facilitate cleaner production by external stakeholders.
- Review of the State Recycling Blueprint (November 2001) documents progress towards achieving the 76 recommendations proposed in the original State Recycling Blueprint (1993).
- The Select Committee on Recycling and Waste Management (1995) and the Western Australian Government's 1996 Response to that report.
- Landfill levy and Waste Management and Recycling Fund (WMRF) that provides a source of funding for a range of waste management, waste reduction and recycling initiatives. After three years of operation, the WMRF and the landfill levy which supports it are being reviewed to ensure that it remains an effective incentive to sustainable development.
- Mandatory common-use waste and recycling contracts have been established (by Department of Industry and Technology in consultation with DEP) for waste audit consultancy; waste bins and waste removal; waste paper and cardboard collection; controlled and radioactive waste removal; and total integrated services – disposal and co-mingled recycling. The contracts are designed to meet the State Government's commitments in relation to waste management, disposal and recycling. They will also

enable capture of waste management and recycling information across the whole of Government.

- The new DEWCP Eco-Office Steering Committee has been charged with reviewing DEP's Eco-Office program and extending it throughout the amalgamated agency. A staff survey is planned, together with audits of recycling habits and energy efficiency.

WA is directly involved in, or has a watching brief over, a number of national strategies including:

- National Packaging Covenant and the associated National Environment Protection (Used Packaging Materials) Measure;
- Environment Protection and Heritage Council's development of Waste Criteria;
- Environment Protection and Heritage Council's Eco-Efficiency initiative;
- Environment Australia's co-ordination of product stewardship for the Electrical and Electronic Goods Industry;
- *Product Stewardship (Oil) Act 2000*, which imposes a levy on production and importation of oil in order to encourage waste oil recycling;
- Environment Australia's Environment Industry Action Agenda (Department of Industry and Technology is the responsible agency, but liaises with DEP).

What New Strategies/Approaches Are Required?

High order strategies/approaches include:

- Waste management legislation – a draft Bill has been prepared and needs to be progressed to provide comprehensive, 'state of the art' headpowers and co-ordination.
- The recently established Waste Management Board needs to be adequately resourced in order to clearly enunciate waste management priorities and strategies.
- Partnership mechanisms which build on the WA Cleaner Production Statement Action Plans to achieve more sustainable production by encouraging industries/companies to go beyond compliance with minimum regulatory standards. Voluntary sustainability covenants have been introduced in Victoria. They will enable partnerships between Government and companies or professional associations, which officially recognise and provide a marketing advantage for companies which progressively apply the triple bottom line.
- Siting of waste disposal, treatment and recycling facilities, ranging from hazardous waste through to, for example, examining the potential for transportable units for inert construction and demolition wastes.
- At the request of the Minister for the Environment and Heritage, the Waste Management Board is exploring the design for a Community Involvement Forum, which is intended to provide the opportunity for rational social debate concerning the above siting issues. It is anticipated

that it will be a two stage process, the first stage being the establishment of a Stakeholder Reference Group that will finalise the design for the wider community involvement in stage two.
- Data collection and life cycle analysis.
- Facilitation of market development for re-used/recycled products.
- Government led recycling and purchasing, including extension of the Eco-Office program to all Government agencies (see current strategies above). The feasibility of Government taking the lead toward recycling and purchasing recycled products will be discussed by the Waste Management Board. One solution may be a joint application to the WMRF, from the State Supply Commission and the DEP, to review the recycled goods purchasing policy. The potential to include the recycling of demolition materials, and use of recycled building materials, in contracts for publicly owned buildings should be considered, perhaps as a complementary policy.

Supporting strategies and approaches include:
- Implementation strategies for the WAste 2020 Action Plans - to identify priorities, roles and responsibilities, and timeframes. Work has commenced on two areas, namely Tyres (part of the Problematic Waste sector) and Construction and Demolition Waste.
- Requirement for separation at source, or, alternatively, for all 'waste' to be sorted at a materials recycling facility prior to landfilling. This would assist with the creation of a more even playing field for recyclable materials, and facilitate recycling of additional resources.
- Tightening of the application of licensing conditions at waste management facilities to encourage diversion of waste to recycling.

The Existing Legislative Base

The existing legislative base is fragmented, comprising parts of the following:
- *Environmental Protection Act 1986 (as amended*);
- *Health Act 1911;*
- *Local Government Act;*
- *Litter Act 1979*; and the
- *Environmental Protection (Landfill) Levy Act 1998.*

Science Supporting Our Understanding

- Database on solid waste to landfill for the Perth Metropolitan area;
- Empirical studies for the *State Recycling Blueprint* and the *Blueprint Review*; local governments; projects funded through the Waste Management and Recycling Fund; and
- Publically available case studies by Curtin University of Technology's Centre of Excellence in Cleaner Production.

Policy Framework And Processes

The Government has established a new Waste Management Board, in lieu of the previous Advisory Council on Waste Management and the State Recycling Advisory Committee. The Minister has charged the Board with strategic roles, including provision of advice that will help set out a sustainable framework for dealing with waste in Western Australia.

Four DEWCP Divisions deal with waste policy and processes:

- Waste Management Branch, in the Resource Management Division, supports the Waste Management Board, develops and implements policies and projects, and administers the Waste Management and Recycling Fund levy and data collection, and the related funded programs.
- Environmental Regulation Division generally administers Part V of the *EP Act 1986*, and processes works approvals (to construct), and licences (to operate) prescribed premises, including landfills. The Division regulates and inspects industry, and deals with liquid and hazardous wastes as well as waste operations (eg Mt Walton).
- Community Affairs Branch, in Business Development Division, is charged with waste management education.
- Regional Operations Division undertakes much of the process work in regional areas.

Many of the processes are outlined in legislation (section above) and supported by regulations such as the *EP Act Regulations, Landfill Levy Regulations, Controlled Waste Regulations.*

Opportunities/Needs

- Opportunity costs are regained when resources are re-used, recycled or recovered for energy rather than being landfilled.
- Employment opportunities will be created by establishment of new reuse/recycling/recovery industries.
- Synergy opportunities arising from co-operative initiatives with national and perhaps global agencies.
- To achieve the opportunities, the 'needs' include a range of solutions to waste management problems, good relations with stakeholders and an educated and aware community.

3.3.7 Information Management

Why Is Information Management A Priority Issue?

Timely, reliable and accurate data and information on the condition of the environment and natural resources, and how they respond to human use, is

fundamental to achieving sustainability. If this information can be integrated with social and economic information then our decision-making can be demonstrably more robust and sustainable.

Existing Barriers To Sustainability

The last State of Environment Report (1998) identified that the State lacked a monitoring and evaluation system for reporting on the environment and outlined the principles and framework for such a system. In addition to this, there are widely different approaches to social and economic information reporting.

To date environmental and natural resource condition information largely resides in State agencies and is shared on an as needs basis. There has not been an attempt to integrate for whole of community/government benefit. The closest example of integration has been at the national level through such work as the National Land and Water Resources Audit. DECWP was part of this effort. The EPA/DEP have been working with WALIS for sometime to develop components of such a system. A central database(metadata) inventory has been established through WALIS that lists environmental monitoring data throughout WA.

New Strategies for Sustainability

There is the opportunity to develop a web site that will be a support tool for Government to provide the public with an understanding of the state of the environment. Initially it will be the major source of up-to-date environmental information. However, in time could include integrated social and economic data sources that support improved natural resource management, as new indicators for progress towards sustainability emerge.

The system could, for the first time, incorporate a range of NRM spatial datasets including those created through Land Monitor, National Land and Water Resource Audit, and NW Shelf programmes, with information from other State Government programmes such as the Salinity Action Plan, State of Environment Report, Metropolitan Air Quality, Greenhouse, sustainability projects, and regional natural resource management strategies and catchment plans. The site could contain advice and policies generated by the EPA and other agencies, spatial data with mapping capabilities, metadata search and input tools, scientific reports, and other environmental statements and reports.

Legislation

Through the Environmental Protection Act (1986) DEWCP and the EPA have the responsibility under legislation that would enable it to implement this strategy.

DEWCP has the scientific skills to fashion appropriate monitoring programs and to interpret the data into information. DEWCP also has the regional networks to provide access to and from community groups and the necessary technology to develop the system. Both DEWCP and EPA are developing their web pages and features of the system can be added as the are developed.

Policy Framework

The policy framework is already agreed and there is the opportunity to pick this up along with the developing monitoring and evaluation framework for the National Action Plan and NHT MKII.

Scientific Understanding

Experimentation with integrating ecological, social and economic data sets will improve our ability to report on progress towards achieving sustainability and assist in decision-making. Currently Ecological Footprint Analysis, coupled with Input-Output Tables is being explored as one analytical tool that can advance our understanding of sustainability.

3.3.8 Land Clearing

Why Is Land Clearing A Priority Issue?

The issue of land clearing is currently one of the most problematic sustainability issues in Western Australia. Salinity and poor soil quality is resulting in large parts of land in the State becoming unsustainable. Native vegetation is responsible for sustaining a balanced ecosystem and maintaining soil quality, low water tables and biodiversity. All remaining bushland is valuable.

Existing Barriers To Sustainability

Western Australia has one of the most diverse and unique ecosystems in the world, yet over 90% of native vegetation in the Avon Wheatbelt area alone has already been cleared.

Weak penalties for illegal clearing and economic disincentives often encourage the case for clearing native vegetation and therefore can be defined as barriers to sustainability.

The current penalties for clearing illegally involve a maximum fine of $3000 for individuals in rural areas, an amount which some have found is inconsequential in relation to the gains made by clearing the land in the first

place. It is often more cost effective, therefore, to clear the land without authorisation and suffer the penalty, than to preserve the native vegetation.

There is also relatively little economic incentive to preserve native vegetation. Land that is not able to be used for agricultural, pastoral or commercial activity is often perceived as useless to the landowner. Owners can be taxed heavily for preserving native vegetation. The "unimproved value" ratings system by which land is valued is outdated and does not discriminate between developed land and undeveloped land, meaning owners with developed land pay no more tax than owners who work to preserve native vegetation. Land is also valued at its "highest and best use", not in its current state, which encourages potential development of the land to increase its value.

Current Strategies

New legislation has been introduced to Parliament to establish stricter controls on clearing native vegetation and implement harsher penalties for those who clear without authorisation. Once this legislation is passed, the DEWCP will be responsible for the administration and assessment of clearing applications. The new legislation will allow the Department to assess for all forms of environmental degradation (ie. effect of clearing on biodiversity, water quality etc.). Agencies such as CALM and the Department of Agriculture will also be involved in the assessment process.

Incentive and assistance measures to encourage the protection of native vegetation are also currently being drafted. The proposed measures will include the implementation of programs to assist landholders in the transition to the new process and encourage the purchase of areas of native vegetation purely for conservation purposes.

New Strategies Needed

Further development is required to produce effective incentive and assistance measures.

A more sophisticated audit and enforcement system needs to be established to monitor illegal clearing and statistics on land clearing (legal and illegal) need to be generated for reporting.

The Existing Legislative Base (Policy, Regulation, License)

Under the Soil & Land Conservation Act, clearing of more than 1 hectare resulting in a change of land use requires individuals to submit a Notice of Intention to Clear to the Soil and Land Conservation Commissioner. The Commissioner may assess the notice to clear within 90 days and may issue an Objection if there is potential for land degradation if the clearing occurs. The

system focuses on soil conservation with only some environmental impact assessment and so factors such as biodiversity, water quality etc. (ie. factors essential to sustaining healthy ecosystems) are not always taken into account.

The Science Supporting Our Understanding

The environmental impact of land clearing has been extensively researched by CSIRO, in particular Dr John Williams in the Land and Water Branch and Dr Carl Binning in Sustainable Ecosystems.

The Policy Framework And Processes

Due to the status of the proposed legislation the policy framework and the associated processes are currently under development. It is anticipated that the policy and the operating systems to implement the new legislation will be finalised over the next few months, while the legislation is being debated in Parliament.

Opportunities/Needs

The introduction of new legislation to regulate further clearing provides the foundation on which to build sustainable industry. Encouraging the community to protect and maintain native vegetation through the introduction of incentive and assistance measures to support the new legislation and the removal of economic disincentives will assist in implementing the State Government's "no net loss" objective for WA's remaining native vegetation. To ensure the most is made of this opportunity it is essential that the new process is fully resourced to satisfy both key stakeholders and the wider community that WA is contributing to a comprehensive sustainability strategy.

3.3.9 Natural Resource Management Performance Evaluation

Why Is Natural Resource Management Performance Evaluation A Priority Issue?

There is an increasing expectation by the Western Australian community that sustainable management of natural resources can be demonstrated and that Government is accountable for protecting and maintaining the values we associate with a healthy environment. This requires all agencies responsible for managing the natural environment to make evident, in a transparent manner that progress towards the sustainable management of resources is occurring. In addition, there should be a process of continuous improvement in the way in which natural resources are managed.

Existing Barriers To Sustainability

Agencies and organisations need to have clear and defined processes for protecting the values of natural resources, allocating resources, assigning responsibility and evaluating operations. However, there has been no common understanding or process across the broad environmental sector, to establish consistent environmental management systems.

Current Strategies

DEWCP, through the EPA and the Service Unit, now has a major role in facilitating this process, by assisting agencies to identify environmental values, objectives and targets, which they should take into account in giving attention to their environmental responsibilities. The EPA also has a role at the evaluation level in reviewing environmental performance against those objectives and targets so as to assess the performance of natural resource management (NRM). This has two important benefits for the state. Firstly, it helps to ensure that there is a broad strategic process in place for managing natural resources and addressing environmental concerns. And secondly, it encourages environmental sectors to undertake monitoring to review and improve their knowledge of the interactions of their programs and actions on the environment and thereby improve NRM outcomes.

The front end of this process (i.e. the setting of environmental values, objectives and targets/criteria) directs what information or indicators are required to assess NRM performance and progress towards achieving environmental objectives (in some instances, this will also be influenced by national programs such as NAP and NHT). To evaluate performance, NRM sectors through their implementation strategies and actions, will need to align current monitoring programs to ensure data is being collected on both the condition of the environment and the performance of management. Each sector will then be responsible for reporting progress on their outputs and outcomes towards meeting their environmental objectives to the EPA.

Importantly, this process is about how DEWCP and the EPA can facilitate the NRM sectors to identify how they can manage the natural resources for which they are custodians, in a sustainable manner. As such, the process aims to support and improve existing policies that currently direct NRM.

This process is consistent with and will facilitate the implementation of the State Sustainability Strategy. Sustainability needs a nested model that recognizes economic activity within the broader needs of society and contained within the capacity of the natural ecosystem to accommodate that activity in this generation, without compromising the opportunities and choices of the next generation. Sustainability should also bring together economic, social and environmental values; and it should be considered at the local as well as regional scale. To move towards sustainability there has to be

an acceptance of these needs, approached through partnerships between government, industry and the community.

Legislation

This process is largely guided by the *Environmental Protection Act 1986* (E.P.Act 1986). Part IV of the Act is about the assessment of proposals for actions that are referred to the EPA by companies, public authorities and others. Under Section 48, the EPA can undertake an assessment of natural resource management. This allows the EPA to evaluate natural resource managers to ensure that their performance meets agreed environmental objectives and targets.

Opportunity/Needs

The EPA, with support from DEWCP will endeavor to continue to be a major player and independent advocate and to provide advice to the Government on how these sustainability concerns can be addressed through the NRM performance evaluation process. The EPA will work closely with the agencies and take into account the arrangements already in place to agree upon the most appropriate method to undertake this task in an independent and transparent manner. Natural resource sectors that are currently involved in this process include:

- Forestry
- Fisheries
- Rangelands/Pastoralism
- Agricultural Systems (primarily dealing with salinity in the first instance)
- Water
- Air

3.2.10 Air Quality

Why Is Air Quality A Priority Issue?

The results of two major studies were published in 1996 – the Perth Photochemical Smog Study and the Perth Haze Study. These indicated that Perth was on the verge of having an air quality problem. Studies since then have shown that ambient levels of the pollutants responsible for smog and haze (ozone and fine particulates respectively) have not improved, and there are indications that general ambient levels of ozone are actually increasing. We also continue to see numerous breaches of national air quality standards each year.

The implications of these findings are serious in terms of the health impacts as numerous international and Australian studies have shown a clear relationship between increased pollutant levels and mortality and morbidity. Those most at risk tend to be those with respiratory and cardiovascular conditions, asthma and acute respiratory diseases.

Clearly the costs to society of these burdens on the health system need to be addressed.

Air toxics (including heavy metals and organic compounds) are also of concern. Many substances released into the air by motor vehicles, industry and during bush fires are known or suspected carcinogens and emissions must be reduced as far as possible. Other substances, including heavy metals, can accumulate in the ecosystem and in the human body and have a range of health and environmental effects.

In some regional areas there are significant air quality issues impacting on rural communities such as in the North West and in wood smoke and burn impacted populations in the south-west. Particular industrial developments are causing community concern in a number of areas.

Air quality in Perth is a reflection of our unique meteorology and topography and of our behavior. There is a need for industry to move towards cleaner production and for the community to change behavior to reduce reliance on the motor vehicle. While some gains can occur through improvements in vehicle and fuel technologies, these are soon eroded as people increase their use of motor vehicles.

Existing Barriers To Sustainability

Transport, energy and power generation are currently based on combustion of non-renewable resources which produce emissions to the air.

Long-term impediments to change include the fact that Western Australia is a very large state, and Perth's population is spread over a wide area resulting in a reliance on the motor vehicle. Added to this, subdivision design and building design has traditionally not taken into account the opportunities for energy efficient buildings which would reduce the need to heat and cool homes. Wood heater use is widespread and is the major contributor to particulate haze in winter.

There is a lack of education and training and awareness throughout the community of the impacts of daily activities on air quality, and of what behaviour change is needed. In delivering these messages there is a lack of an integrated approach between state and local government organisations, Non-

government organisations, communities and education institutes and is important that some capacity is built in these areas.

The lack of standards and guidelines for a number of ambient air pollutants, particularly air toxics, is a further barrier to sustainability as there are no consistently applied benchmarks which are applied to the assessment of industry. There is also little understanding of the ambient levels of a number of air toxics.

Current Strategies

Studies of ambient pollutant levels, pollutant emissions, population exposure, modeling and trends analysis play an essential part in air quality management in Western Australia. The results from such studies are able to inform future policy directions and management requirements for air quality.

Ambient pollutants levels are monitored at a number of sites throughout the state. Emissions inventories are updated every 3 to 5 years. Trends analysis of criteria pollutants is likely to be undertaken every 5 years. Sampling programs to establish levels of major volatile organic compounds (VOCs) have been undertaken, and Western Australia is currently coordinating a person exposure study for VOCs on behalf of Environment Australia. Ongoing development of air quality models continues to improve our ability to predict how Perth's air quality will be affected under various air quality management scenarios.

The Perth AQMP is a 30 year strategy for improving Perth's air quality which was released in December 2000. The strategy is a Cabinet initiative which has been developed by a range of stakeholders including State Government agencies, industry and the community. Implementation of the Perth AQMP has begun, specifically priority actions aimed at the areas of land use transport and planning, vehicle emissions, community education and behaviour change and industry. A number of actions within the Perth AQMP have commenced including behaviour change programs such as TravelSmart, regulations relating to wood heaters and burning on land development sites and input into state policies and initiatives such as Future Perth.

Clean fuel regulations were adopted in Western Australia in 1999 which are the most stringent in Australia in terms of air quality benefits.

The National Environment Protection Measure (NEPM) for ambient air quality sets standards and goals for ambient air. Implementation of the National Environmental Protection Measure for ambient air quality will be through a State-wide Environmental Protection Policy.

A NEPM is currently under development for air toxics and a review of the ambient air NEPM in relation to PM2.5 is nearing completion. A NEPM has recently been finalised for diesel test emissions with implementation to occur in early 2003.

The Pilbara airshed study supports the environmental impact assessment process with respect to new development in the Pilbara region.

New Strategies And Approaches Needed

Appropriate funding for the wide range of programs necessary to promote sustainability as it relates to air quality. This will include funding of the Perth AQMP as well as the many other functions undertaken by the Air Quality Management Branch such as the monitoring and studies mentioned above.

A community education strategy must be developed as part of the Perth AQMP to ensure that the community is kept informed and involved in initiatives to improve air quality. This will include education of the community in its widest sense, incorporating industry, government and communities. Committed funding will be essential to ensure that a comprehensive and effective program is achieved.

Continued implementation of other Perth AQMP priority actions must also occur, with a focus on transdiscplinary coordination. A framework for land use transport and planning with local government links needs to be improved. Development of strategies for small to medium industry will also be essential.

Commitment to NEPMs must be maintained.

Ambient air quality guidelines must be progressed with a view to developing standards which are appropriate for protection of human health and the environment.

Studies into the impacts of air pollution on health must continue to be undertaken in Western Australia. Further consider the public health implications of air pollutants on a local, regional and global scale

Links must be maintained with Greenhouse issues. While many greenhouse initiatives will be complementary to air quality improvement, there is a potential for conflict or competing interests which need to be recognised.

Participation in National and International Forums is essential to ensure that Western Australian issues are taken into account in policy development, and that Western Australia remains well informed of international responses to air quality issues.

Long-term impacts such as long range transport of air pollutants will need to be considered.

A method for assessing health impacts needs to be developed to assist the environmental impact assessment process.

Improved databases are needed containing information and results from air monitoring studies to assist in assessing proposals.

There is currently little information on airsheds in the South West of the State. This is of concern due to an increasing number of industrial proposals in the area.

Existing Legislative Base

Environmental Protection Policies (EPPs) are in place for Kwinana and the Goldfields which place standards and limits on ambient air quality for sulfur dioxide and dust (Kwinana only). Levels are set to be protective of human health and place limits on the emissions of sulfur dioxide from industries in those areas.

A Statewide EPP, under Part III of the *Environmental Protection Act 1986*, is being developed to implement the National Environment Protection Measure for ambient air.

A number of regulations exist for air quality management. These include the *Environmental Protection (Diesel and Petrol) Regulations, 1999* governing fuel quality in Western Australia. Woodsmoke reduction is facilitated through regulations on wood heaters sold which must meet Australian Standards, and on wood suppliers who must ensure green wood is not sold in Perth. Regulation is just one way of managing air quality issues.

The environmental impact assessment process under Part IV of the *Environmental Protection Act 1986* and licensing and registration of industry emissions under Part V of the Act are another means by which the air quality and sustainability can be addressed.

3.3.11 Contaminated Sites Management

Why Is Contaminated Sites Management A Priority Issue?

Contaminated sites can pose a threat to human health and the environment. They also have significant planning, economic and legal implications. Over the past two decades there has been an increasing recognition of the problems associated with contaminated sites. The problem is of special importance in

Western Australia because of our great reliance on groundwater and the threat posed by contaminated land to groundwater quality.

It is estimated that there are around 2500 contaminated sites in Western Australia based upon the types of land uses which result in contamination, such as service stations, fuel depots, power stations, rail yards, market gardens and landfills. The Department of Environmental Protection (DEP) holds files for around 600 sites which have been reported to the DEP. Of these, around 70% have groundwater as well as soil contamination issues, and often this groundwater contamination is migrating offsite and impacting adjacent properties including domestic irrigation supplies.

Existing Barriers To Sustainability

The number, nature and extent of contaminated sites in Western Australia is largely unknown. The figures provided above are a best-guess. It is also an unknown, what impacts are currently occurring to the community and the environment by contaminated sites. There is the need for a management system to identify the contaminated sites we have and to set up a risk-based framework on how to manage those sites which pose a risk to the environment and human health to mitigate those risks.

Current Strategies To Address Contaminated Sites

Current strategies for managing contaminated sites include the "National Environmental Protection Assessment of Site Contamination Measure" (1999) which provides a national, risk-based approach to the identification and investigation of contaminated sites and the risks they pose to human health and the environment.

In Western Australia, the principles of the NEPM have been incorporated into a series of guidelines called the Contaminated Sites Management Series which provide a framework for the identification and investigation of contaminated sites to a ensure consistent approach across the State.

The EPA have issued a Guidance Note "Guidance Statement for Remediation Hierarchy for Contaminated Land" (July 2000) on the remediation of contaminated sites. This sets out a hierarchy of remediation options based upon treatment of contaminated soils and reuse of those soils (as opposed to the non-sustainable option of disposal of contaminated soils to landfill).

New Strategies or Approaches Needed

There is the need for improved transfer of information on the location and nature of contaminated sites in Western Australia. This is especially important in the planning process to avoid the redevelopment or rezoning of

land which is unsuitable. Transfer of information is also required to ensure that innocent parties do not buy contaminated sites which then become a liability.

There is increased interest and understanding in the community about the issue of contaminated sites. It is important that the community be provided with the opportunity to input into the management of contaminated sites within their areas, particularly those that are impacted by the contamination. The management of contaminated sites is technically complex and guidance is required to ensure that proponents and the community alike, are aware of best-practice methods for the investigation and management of these sites.

Legislative Base For Managing Contaminated Sites

Contaminated sites are currently managed under the provisions of the Environmental Protection Act (1986) whereby notices can be issued under Part V of the act for the remediation of sites. However, these powers are limited in terms of their application, and are able to be used in only a few circumstances. In order to address the gaps in the current legislation, contaminated –site specific legislation has been drafted which provides; a management framework for identifying contaminated sites, the DEP with powers to require the investigation and clean-up of sites, a hierarchy of liability based upon the "polluter-pays" principle and a system for government clearance of sites and transfer of liability.

The Science Supporting Our Understanding

The area of contaminated sites is technically complex. It involves an understanding of contaminant chemistry, fate and transportation characteristics, geology and hydrogeology and geochemistry. In addition to these more traditional sciences, there is an increased need for skills in communication and social sciences to assist in the transfer of technical information to the community and involvement of the community in decision-making regarding the management of contaminated sites.

4.0 CONCLUSION

The approach to sustainability should be no different to any other strategic planning exercise. The elements are:

- to know where you want to go;
- to work out ways of getting there;
- to set our milestones along the way to check progress;
- to put in place adaptive management to keep focused on the destination; and,
- to know when you have got there.

The State Sustainability Strategy needs to address these key elements in a way which government can both provide leadership in the community and provide best practice examples of sustainability governance.

However it is in the mechanisms, protocols, reforms, processes and strategies underpinning sustainability from government's perspective that demand attention if the plan is to succeed.

While sustainability is concerned with making wise choices about what we do and the way we will, governance is about making wise value judgments which involve equity: both intra and intergeneratal which affect these choices.

The State Sustainability Strategy should set out the path to this evolutionary change. DEWCP is well positioned to play its part as a major contributor to sustainability and responsible development of Western Australia.