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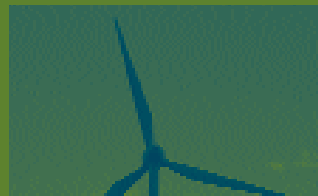
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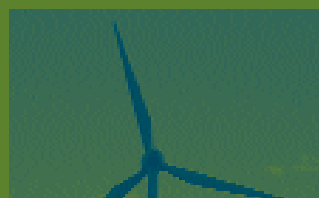
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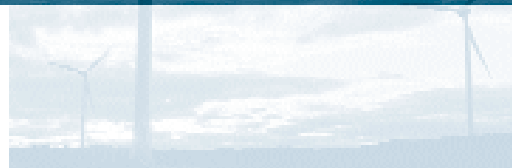
Focus on the future

The Western Australian State Sustainability Strategy

GOVERNMENT OF WESTERN AUSTRALIA

September 2002

The drafting of the State Sustainability Strategy was led by Professor Peter Newman, Director, Sustainability Policy Unit, Department of the Premier and Cabinet.

Photo credits:
Front cover and title page Ellenbrook, Western Australia: Artist and photographer Phillipa O'Brien

Wind turbines: Dessein Graphics

People in field: Midwest Development Commission

An electronic copy of this publication, together with the submissions, background papers and seminar proceedings that informed its development are included on the CD-ROM at the back of this document.

A poster showing the relationship between elements of the proposed sustainability framework is also inserted within this document.

This document is printed with plant-derived inks on Australian-made recycled paper.

Foreword

In December 2001, I initiated the process of delivering the Western Australian Government's election commitment to develop a sustainability strategy for Western Australia and invited interested community members, industry and government agencies to assist in the development of Australia's first comprehensive sustainability strategy at the state level. Since that time there has been great interest from Western Australians and others about this significant initiative.

The draft State Sustainability Strategy shows how we can meet the needs of current and future generations through simultaneous environmental, social and economic improvement. It proposes new principles, approaches and actions to help us to achieve a more sustainable future. Clearly, sustainability is a concept that resonates-many people, government agencies and businesses now see this approach as the only way forward.

The transition to a sustainable future is a long-term agenda that requires rethinking the way we live, use resources, govern and do business. The draft Strategy challenges us to consider new ideas and to be innovative about the opportunities that are presented. The proposed actions in this draft Strategy aim to be implemented over the next five to ten years, though many could begin immediately. A number of partnership processes are outlined in this document and they will be crucial to the successful implementation of the final strategy.

More than ever before, the time is right for this important strategy. The debate at the recent World Summit on Sustainable Development in Johannesburg has shown that integrating the environment, society and the economy remains an enormous challenge. Individuals, businesses and governments everywhere are searching for new approaches to development that contribute to environment and society now without degrading them over the longer term. Western Australia shares this aspiration and I am confident that we can achieve it and benefit from the opportunities that sustainability brings.

I am delighted with the genuine enthusiasm and support expressed by so many people for this initiative thus far. Many people attended seminars, wrote submissions and visited the *Sustainability WA* exhibit and this input has helped in preparing this draft Strategy. I sincerely hope that the final strategy will survive, evolve and grow beyond successive governments because we are addressing the future of Western Australia, and most importantly, the future for our children.

In finalising the strategy, we are also committed to continue consulting with industry and the broader community and I invite your comments. Your contribution will assist the Western Australian Government to prepare a final strategy that will help create a sustainable future for generations to come.

Hon Dr Geoff Gallop MLA
Premier of Western Australia

September 2002

Overview of selected strategic actions

This consultation draft of the State Sustainability Strategy proposes a number of strategic actions for sustainability in forty-two priority areas that could be implemented over a five to ten year period. A selection of proposed actions is set out below under the Western Australian Government's six goals for sustainability.

Ensure that the way we govern is driving the transition to a sustainable future

- Demonstrate leadership by requiring government agencies to develop a **Sustainability Action Plan** to address a range of issues including energy use, greenhouse emissions, waste minimisation, community engagement and sustainability procurement.

- Initiate **sustainability assessment** – an integrated and holistic approach to decision-making to create 'net benefit' outcomes.

- Establish a **State–Local Government Sustainability Roundtable** to coordinate state and local government sustainability efforts, as well as partnerships with other stakeholders including the **WA Collaboration, industry** and **research organisations**.

- Develop planning and **Regional Sustainability Strategies** including regional 'sense of place' stories to embed sustainability.

- Promote Aboriginal employment targets in major developments, joint management with Aboriginal people of National Parks and an **Aboriginal Country Management Program**.

Play our part in solving the global challenges of sustainability

- Establish a new **Global Centre for Sustainability** combining expertise from universities, TAFE, the CSIRO, government and industry to undertake major international partnership projects on the interrelated issues of population, development aid and environmental technology.

- Establish a voluntary **Greenhouse Offsets** program to enable greenhouse emission reductions and carbon capture in major projects.

- Develop a **Biodiversity Conservation Strategy** that builds on the 30 new National Parks, assesses the need for new reserves, and supports the linking of major reserves with areas of privately owned bush and regeneration to help meet Australia's international obligations for biodiversity protection.

- Establish a **Taskforce** that will set short, medium and long-term transport goals for the transition from **oil vulnerability**, to gas, to the hydrogen economy.

Value and protect our environment and ensure the sustainable management of natural resources

- Incorporate sustainability principles and practices into **legislation** administered by relevant government agencies.

- Use **Statements of Planning Policy** and other mechanisms to co-ordinate the actions of local governments, regional councils and state natural resource management agencies for priority issues and areas, for example, regional drainage, biodiversity corridors, local community services and coastal planning.

- Build **community values** into regulatory approaches to natural resources management.

Plan and provide settlements that reduce ecological footprint and enhance our quality of life

- Encourage household water management through a range of measures (rainwater tanks, bores, grey water recycling, and native gardens) to conserve water as part of the **State Water Strategy**.

- Emphasise the **revitalisation of suburbs** and, as part of *Future Perth*, develop growth management to control urban sprawl.

- Overcome car dependence through development that builds on the doubling of the **rail system** and revamp the **Perth Bike Plan**.

- Introduce measures, including detailed plans for each waste stream, to meet the target of **zero waste by 2020**.

- Develop a **Sustainable Planning, Building and Construction Guide** to encourage thermal efficiency, solar orientation, accessible design and other sustainable building practices in new and renovated homes.

Support communities to fully participate in achieving a sustainable future

- Involve the community in developing **Regional Integrated Community Services Plans** to help prioritise and co-locate services.

- Establish demonstrations of sustainability in school buildings and grounds, including through schools adopting or rehabilitating an area of local bush.

- Develop a comprehensive **community education and awareness** process on sustainability.

- Promote local content in arts projects to support the development of **'sense of place'**.

- Hold an annual sustainability ethics seminar **'Many Cultures – One Earth'**.

- Use the *Consulting Citizens Resource Guide* to promote effective public consultation and active citizenship.

Assist business to benefit from and contribute to sustainability

- Establish training schemes to provide capacity in new areas of professional activity for sustainability through initiatives such as the TAFE **Centre for Applied Sustainability.**

- Review taxation, subsidies and financial incentives to promote sustainability and support **Sustainability Investment Tours**.

- Create **industry sustainability covenants** that recognise and help to market sustainability innovation and leadership.

- Develop through **industry partnerships** new approaches to sustainable building, eco-efficiency (the factor 4 agenda), sustainability asssment, mining and sustainability, corporate social responsibility and the new sustainability research and development agenda.

Acknowledgements

Contents

CD-ROM and Poster
A CD-ROM with an electronic copy of the draft
Strategy and background material is in the pocket
on the inside back cover, as well as a poster on
the Sustainability Framework.

Summary

Sustainability is meeting the needs of current and future generations through simultaneous environmental, social and economic improvement.

The Western Australian Government has embraced sustainability as a fundamental driver towards a better future for all Western Australians. The draft State Sustainability Strategy begins this process and responds comprehensively to this challenge.

In August and September 2002 the World Summit on Sustainable Development took place in Johannesburg, South Africa. The summit examined how the world had given meaning to sustainability and taken action the 1992 United Nations Conference on Environment and Development. With the release of the draft State Sustainability Strategy, Western Australia is now also part of the global response to sustainability.

There are compelling reasons why Western Australia should be part of this global agenda. While the state's economy is robust, the health of our natural environment is compromised by threats like salinity, loss of biodiversity and climate change. Social problems of isolation, homelessness, poverty and other forms of inequity are also apparent. Sustainability challenges us to address these problems in an integrated way and to find opportunities that pursue new forms of development that do not compromise the health of our environment or society.

The character of the State Sustainability Strategy is to facilitate processes where creative dialogue can occur to help resolve deep-seated issues and tensions and to enable partnerships to open up new possibilities.

The transition to a more sustainable future is a long-term agenda that requires rethinking the way we live, use resources, govern and do business. These changes will take time as institutions change slowly. For example the process of legislative reform to better support sustainability may take many years, as will widespread community awareness and understanding about sustainability. The actions outlined in this Strategy aim to be implemented over the next five to ten years, though many could begin immediately.

Priorities for implementation will be determined by feedback from consultation and advice from roundtables and working groups established to drive the next stage of the process.

Making sense of sustainability

The definition of sustainability in the draft Strategy is challenging and visionary. It implies, for example, that an activity that only addresses two of the dimensions simultaneously (say provides both economic and social gains but 'trades off' the environment) is ultimately not sustainable.

Sustainability is sometimes described as the 'triple bottom line', to reflect the importance of considering equally the environmental, social and economic dimensions in decision-making. The definition in the draft Strategy goes beyond the triple bottom line through emphasising the importance of integration between these dimensions and achieving them simultaneously. The draft Strategy demonstrates where this is occurring already. Importantly it also proposes actions to move Western Australia beyond the triple bottom line toward integrated sustainability outcomes.

Sustainability framework

The sustainability framework consists of eleven principles, six long-term visions for Western Australia, each with a goal for the Western Australian Government and forty-two priority areas for action. The sustainability framework is represented graphically in the poster at the back of this document.

The eleven sustainability principles go beyond the well-established notions of 'intergenerational equity' and 'the precautionary principle' by attempting to better reflect the social dimension of sustainability. For example, additional principles are proposed which reflect the importance of culture and supporting a 'sense of place' as part of a more complete approach to sustainability. These principles are important guideposts for government activity, policy and decision-making.

A commitment to sustainability requires a belief in a better future for everyone. The government's proposed sustainability goals are:

- **Ensure that the way we govern is driving the transition to a sustainable future.**
- **Play our part in solving the global challenges of sustainability.**
- **Value and protect our environment and ensure the sustainable management of natural resources.**
- **Plan and provide settlements that reduce the ecological footprint and enhance quality of life.**
- **Support communities to fully participate in achieving a sustainable future.**
- **Assist business to benefit from and contribute to sustainability.**

Opportunities for sustainability

The bulk of the strategy addresses the sustainability opportunities for Western Australia and is divided into six sections, one for each goal. The priority areas explored under each goal are summarised here and the proposed actions are also listed.

Sustainability and governance

Agency leadership

The government will demonstrate leadership by ensuring the way it governs is supporting sustainability through its policies, legislation, decision-making and programs. The sustainability of operations of agencies will be enhanced through Sustainability Action Plans. The government can also assist business and the community to embrace sustainability and the new opportunities that it presents.

Assessment

Sustainability assessment is an integrative, whole of government approach to decision-making that gives equal and up-front consideration to environment, social and economic factors. It is an innovative and important means of ensuring that government's activities are sustainable, and also extending this expectation to business and the community. Sustainability assessment goes further than mitigating the negative impacts of an activity by searching for opportunities to achieve simultaneous improvement in all three aspects of the triple bottom line. Sustainability assessment will be undertaken on significant

projects, plans, policies and programs, Cabinet submissions, proposed government agreements, corporate plans and new legislation. A working group with industry will help to better define the emerging techniques of the triple bottom line.

Partnerships

Achieving a more sustainable future will also require government to enter into genuine partnerships with a range of key stakeholders to undertake planning processes that forge a sustainable future together. With the release of the draft strategy, partnerships will be established with the Western Australian Local Government Association, the recently established WA Collaboration (peak civil society group) and business representatives in order to develop common approaches for sustainability. They will help finalise and implement the State Sustainability Strategy.

Planning and regional

A particular focus of the State-Local Government Sustainability Roundtable will be investigating the potential of the statutory planning system and Regional Councils of Local Government to support sustainability outcomes, particularly at a regional level. This is the most appropriate scale to undertake planning for sustainability. Regional Sustainability Strategies will also be developed to apply the State Sustainability Strategy regionally and to allow interested communities to tell their 'stories' and further define their 'sense of place'.

Indigenous

The Western Australian Government's commitment to a new and just relationship with Indigenous people also provides the context to develop Indigenous Regional Sustainability Strategies that contribute to Regional Sustainability Strategies and form the basis for longer-term Comprehensive Regional Agreements.

Research and development

Sustainability requires innovation, supported by research and development, to continue to develop new solutions to the challenges that sustainability presents. Western Australia is well placed to contribute to resolving both local and global challenges and this will be supported through the establishment of a Global Centre for Sustainability involving universities, government and industry. The government can also support sustainability through recognising and rewarding innovation and excellence by business, individuals and others within the community.

Information and excellence

Integrated and accessible information is critical to sustainability, allowing targets and indicators to be monitored and community and business engagement on key issues. The the government is hoping to establish Sustainablity On line, a one-stop shop for sustainability information. The government can also recognise sustainablitity excellence with an annual award.

Contributing to global sustainability

Western Australia has much to offer the rest of world in addressing global sustainability challenges like population growth, protecting biodiversity, climate change and the transition from fossil fuels.

Population, development aid and environmental technology

We can assist with the significant challenge of reducing global population growth through contributing to development aid, reducing our own consumption of resources and developing sustainable technologies that can be used in developing countries through initiatives such as the Global Centre for Sustainability.

Biodiversity

Western Australia's biodiversity is recognised as highly significant globally, and its conservation is a prerequisite for sustainability. In addition, biodiversity offers the potential for new forms of sustainable industries, such as bio-prospecting and nature-based tourism. The challenge for Western Australia is to better understand the biodiversity that we have and to ensure it is protected for future generations.

Greenhouse

Climate change is likely to impact significantly on Western Australia and a comprehensive State Greenhouse Strategy is being developed to address the issues of greenhouse emissions, adaptation, sequestration and the need for new industries. As climate change is a truly global phenomenon, Western Australia can also assist the rest of the world to play its part in becoming less carbon-intensive through developing new, cleaner and less energy-intensive processes and industries.

Oil vulnerability, the gas transition and the hydrogen economony

While fossil fuels have been the basis of industrial economies for several hundred years, it is recognised that their use contributes significant greenhouse gas emissions and pollution. A clear imperative is the vulnerability of our economies and societies to the declining availability of fossils fuels, particularly oil. Western Australia has a strategic advantage because of its large reserves of gas, which is increasingly viewed as a transition fuel towards a more sustainable hydrogen economy. A Taskforce will pursue this issue.

Sustainable use of natural resources

Much of Western Australia's wealth and sense of identity comes from the use of natural resources. Agriculture, forestry, fishing and the production of minerals and petroleum all provide employment, development opportunities and wealth. Tourism is also a significant contributor to the economy and relies heavily on the natural assets of the state. However, there are significant sustainability challenges to many of these sectors and action must be undertaken to address these. The sustainable use and management of aquatic systems, the coast and marine environment and the rangelands deserves special consideration because of their significant scale and importance to the Western Australian community.

Agriculture

The declining terms of trade for farmers, significant environmental impacts of agriculture and diminishing rural populations all indicate that there are very real and significant challenges to achieving sustainable agriculture in Western Australia, as there are in many parts of the world. Shifting agriculture to a more sustainable basis will require continued innovation to develop new industries which do not impact the environment and new policy settings that recognise and reward sustainable agricultural production.

Fishing

Western Australia is fortunate to have a well-managed fishing industry, supported by regulation and technology and resources for monitoring and reporting. The Commonwealth Government requires export fisheries to address sustainability issues in order to obtain export approval. The Western Australian Government has recently adopted a policy on the ecologically sustainable management of fisheries that is a world first. Notwithstanding this, further work is required to better reflect the social aspects of sustainability and to better understand fishing in the context of marine ecosystems.

Forests and plantations

Western Australian law provides for the ecologically sustainable management of our forests. The government ended logging in old growth forests and is proceeding to incorporate these areas into secure conservation reserves, including 30 new national parks. As part of this process the government has put in place programs to restructure the timber industry to maintain social capital and regional development opportunities. The development of the new Forest Management Plan provides the opportunity to put in place a framework for the sustainable management of forests into the long-term. Significant effort is also being directed to developing the plantation industry in Western Australia.

Mining and petroleum production

The sustainability of the mining and petroleum resources sector has been the focus of recent international and national attention through the Minerals Mining and Sustainable Development initiative, supported by the World Business Council for Sustainable Development. This has allowed companies to examine what sustainability means for extractive industries and will be pursued

further in a partnership with the industry. The contribution of resource development to the well-being of surrounding communities and the use of sustainability assessment methods are important emerging trends.

Tourism

Western Australia's unique and highly diverse natural environment offers a different kind of tourism experience that people from around the world are wanting-subtle, low impact, natural and cultural experiences. Sustainable tourism provides opportunities to protect the natural resources on which this industry depends. Increased effort is needed to assist the tourism industry benefit from sustainable tourism. Certification is an important mechanism to assist this.

Aquatic systems

Many of our aquatic systems are under stress from surrounding land uses. The government has begun a process of developing Environmental Protection Policies on aquatic systems based on community values and scientifically derived water quality objectives.

Coastal and marine

Coastal areas and the marine environment are highly significant to Western Australians; many of our settlements cling to the coast and much of our recreation, leisure and tourism rely on the ocean, beaches and surrounds. A Taskforce recently reviewed the structural arrangements for coastal planning and management in Western Australia and highlighted the importance of sustainability as a driving concept for future coastal planning. In significant areas the sustainability of coastal areas will need to be supported through statutory planning procedures.

Rangelands

There is on-going concern about degradation of the rangelands, the commensurate loss in productivity and profitability and the loss of social capital. New approaches and commitments to pastoral sustainability are emerging.There is potential to plan for and provide a sustainable future for the rangelands that accommodates a diversity of land use and activity.

Sustainability and settlements

The way we plan, develop and redevelop our cities and towns greatly influences our resource use and the quality of life in our settlements. In urban areas the impacts of our lifestyle often becomes very apparent through pollution and waste. Clearly, there are many opportunities to create a more sustainable future through looking at the way we design and live in our settlements.

Growth management and revitalisation

There is a need to prioritise growth in some areas in Perth where there is social and economic disadvantage and to redefine growth in places where development is a threat to sustainability, like some coastal settlements. *Future Perth* will be a significant process to manage growth. Some areas of Perth are in decline after the first phase of development has passed. Most inner city areas have regenerated and the government is helping regenerate other areas through redevelopment authorities and public housing. However, there are urban regions where revitalisation is stalled and could be unlocked to achieve broad sustainability outcomes. A trial project 'Reviving the Suburbs' will be developed.

Integrating land use and balanced transport

The priority given to transport modes and how land use is integrated in these modes are important determinants of the sustainability of settlements. Perth's development over the past fifty years has been guided by planning for cars. This needs to be more balanced with better-integrated land use and transport building on the commitment to double the metropolitan rail system. The government has also recently concluded a review of the freight network on the basis of sustainability and identified a number of actions to guide future activity in this area.

Air

The design of settlements impacts on our air quality. The Air Quality Management Plan needs to be implemented. Reducing and managing wastes in

settlements is fundamental to ensuring a healthy environment and good quality of life and the government's goal of zero waste by 2020 is the vision guiding a number of proposed initiatives.

Water

The sustainability of our water supply is an issue of concern to many Western Australians, especially those who live in the South West. There is a need to provide a vision for the future, new sources of supply and new ways to save water.

Energy

The use of household electricity and gas, renewable fuels, transport fuels, commercial and industrial fuels also provides opportunities for addressing sustainability through providing an efficient service to the economy, helping build communities and not harming the environment.

Heritage

Our sense of place is strongly influenced by the history of where we live and the places that make it unique and special. Valuing and preserving the special cultural elements and built places that are within our settlements can help generate this sense of place and provide a secure base for approaching the future.

Building and construction

The way we construct our buildings and infrastructure provides many opportunties for sustainability. Sustainable construction can result in buildings that are simultaneously less resource-intensive and provide a better environment in which to live and work. A sustainable Planning, Building and Construction Guide will be produced with industry. The government is developing a number of initiatives that share this goal of sustainable building including the Greenhouse Strategy, *Future Perth*, the State Planning Strategy, the State Housing Policy and the Built Environment Policy.

Sustainability and community

In the sustainability debate the social dimension has historically been given less attention than economic and environmental elements. It is now acknowledged that by meeting community needs and enhancing social capital, communities can be better positioned to contribute to the wide range of issues that need to be addressed to achieve a sustainable future. The draft Strategy specifically acknowledges the opportunities to pursue sustainability within the community through health, housing, education, the arts and multiculturalism.

Community services

Central to advancing sustainability is the coordination of government community services including housing, health, education, community development, disability services, justice, Indigenous affairs, regional development and planning. A Regional Integrated Community Services policy will be introduced.

Housing

Good housing options are needed to provide shelter, safety, accessibility and contribute to a sense of community. Housing location and affordability are critical to sustainability and the roles of local government and housing associations need to be increased to assist in this task.

Health

As our lifestyles, consumption patterns and growth of settlements impact on the environment, new hazards and diseases are emerging. The principles of sustainability can be used in environmental and community health management to address some of the causes of health hazards and enhance and promote health.

Education

Education, both formal and informal, plays a vital role in raising awareness on sustainability as well as shifting individual attitudes and behaviour. Formal education and school provide excellent opportunities to demonstrate sustainability in action.

Culture and the arts

The arts has a part to play in providing much of the interpretive work behind sustainability. The arts can be employed as a means to engender community development for sustainability through interpreting cultural values, demonstrating partnerships and celebrating our achievements and hopes.

Multiculturalism

Multiculturalism enables community coherence and diversity of values to help solve sustainablity problems. Dialogue among various traditions and cultures can increase our understanding of how sustainability can be achieved across society and clarify the principles we are using to interpret sustainability.

Sustainability and business

Business and industry are adapting to the sustainability agenda and in many cases are leading the community and government. The business opportunities emerging from the sustainability agenda need to be grasped and new partnerships with the community and government forged. The new global sustainability economy will provide many opportunities for Western Australian business to benefit through demand for new sustainable products and services reflected by the increasing interest in socially responsible investment. The government can assist business to benefit in a range of ways from facilitation of new business opportunities to linking Western Australian innovations for sustainability with investment funds.

Training

Training is the link between sustainablity aspirations and new economic opportunities. The government will work towards a new TAFE Centre for Applied Sustainability to help coordinate and focus the accreditation of professionals and the new sustainability training agenda.

Financial and economic instruments

The structure of the economy is partly determined by the subsidies and indirect support used to attract and support particular industries. These are often important in maintaining international competitiveness, supporting new industries and jobs and can enable the state to ensure that the economy moves in a particular strategic direction. However, they can also distort the market, and can encourage unsustainable patterns of development. Government currently provides a range of incentives and support measures to assist in the development of business in Western Australia. There is potential through these mechanisms to promote sustainability.

Eco efficiency and industrial ecology

New techniques are emerging in industry to simultaneously reduce resource use, minimise costs and improve productivity. Industrial ecology and cleaner production are two of these techniques and are part of the Cleaner Production Statement developed by the Western Australian Sustainable Industries Group and Curtin University's Centre for Cleaner Production. A working group will explore the potential for 'factor 4' improvements in Western Australia, ie., exploring how we can double wealth while halving resource use.

Covenants

Progressive businesses, seeing the benefits of using cleaner and less harmful production methods, often drive sustainability and lead the way for others in their industry sector. Government can make use of this by recognising and encouraging the efforts of progressive businesses, disseminating information about success stories and encouraging other businesses to rise to the standard set by the leaders in their sector. The use of 'sustainability covenants' is a new tool that can be used to assist this process.

All proposed actions are listed at the end of this document.

Introduction

Background

Sustainability is meeting the needs of current and future generations through simultaneous environmental, social and economic improvement.

Sustainability is a relatively new concept but one that has been widely accepted as a powerful way for the world, nations, states and communities to envision their future and to move forward. The concept challenges us to do things differently, and to look for opportunities to improve our environment, society and economy at the same time, rather than accepting trade-offs between these three important dimensions without question.

The Western Australian Government has embraced sustainability. Premier Gallop said in addressing the Western Australian Leaders Conference, '...sustainability–in thought and deed–is the key to ensuring we can improve ourselves and our world. It is an ideal and it does create a challenge but it is the external challenge of making our world better for all and not just a few.'[1] Box 1 provides an overview of the government's commitment to sustainability from the 2001 Environment Policy.

Achieving sustainability is a long-term agenda that requires rethinking the way we live, use resources, govern and do business. In recognition of these fundamental shifts and the need for a strategic approach, the government established the Sustainability Policy Unit in the Department of the Premier and Cabinet in July 2001. In November 2001 the Premier announced that a State Sustainability Strategy would be developed to pursue new forms of development that do not compromise the health of our environment or society. A consultation document was issued in December 2001 and 200 written submissions were received.

BOX 1   AN OVERVIEW OF THE WESTERN AUSTRALIAN GOVERNMENT'S ELECTION COMMITMENTS TO SUSTAINABILITY

Establish an ESD[2] Unit to:
- develop a strategy for sustainability
- monitor and coordinate the environmental, social and economic assessments of government agencies
- undertake ESD assessment of Cabinet submissions, proposed legislation, and agreements
- work with agencies to prepare a code of conduct for policy making and management arrangements.

Introduce annual environmental performance reporting requirements for all government agencies in areas such as energy consumption, waste disposal, vehicle fuel efficiency and recycling.

Encourage all government agencies to buy recycled products where these are available at competitive prices.

Set an example by requiring government departments and agencies to set targets for waste reduction and recycling. These will be audited according to the principles of ESD and included in all Annual Reports.

Source: Environment Policy

[1] Gallop, G (Premier of Western Australia) 2002, *Advancing Western Australia's Leaders Conference*, speech, 25 February, Department of the Premier and Cabinet, viewed 31 July 2002, <http://www.premier.wa.gov.au/Speeches/A01/advancing_leaders_conference_250202.pdf>

[2] In Australia, the term Ecologically Sustainable Development (ESD) emerged from the development of the 1992 *National Strategy for Ecologically Sustainable Development.* Since that time a preference has emerged among business and community leaders worldwide and in Australia for the term 'sustainability' as this term is perceived to be more inclusive. The Western Australian Government has since adopted the term 'sustainability'.

Purpose of the State Sustainability Strategy

The State Sustainability Strategy is the first time that the Western Australian Government has addressed sustainability comprehensively. While there have been elements of sustainability within government policy in the past, the State Sustainability Strategy is the first time that this state has tried to 'meet the needs of current and future generations through simultaneous environmental, social and economic improvement.'

Process to develop the draft Strategy

The draft State Sustainability Strategy was developed in consultation with a range of stakeholders. Developing the draft Strategy involved some innovative activities that are outlined below. All of the information contributed to the thinking behind the draft Strategy, and most written materials are available on the sustainability web site <http://www.sustainability.dpc.wa.gov.au> and on the CD-ROM at the back of this document.

Sustainability seminar series

As part of a seminar series entitled *Opportunities for Sustainability In Western Australia*, visiting experts presented 15 seminars on a range of sustainability issues at the Alexander Library Theatrette (see Appendix A). The goal was to try and determine the key global approaches to sustainability and what could be applied in Western Australia.

Case studies and background papers

The sustainability agenda is new and complex and the preparation of the draft strategy provided an opportunity to tap the research capacity of universities. A university partnership was established which led to students researching and preparing case studies and background papers. The Institute for Sustainability and Technology Policy at Murdoch University provided the most input. The Institute's staff and students have been researching sustainability for over a decade.

Sustainability is best understood by seeing its application by industry, the community and government agencies. Universities were invited to engage undergraduate students in preparing Sustainability Case Studies as part of their course work. The students and several others prepared 44 case studies (see Appendix B). A separate CD-ROM of the Sustainability Case Studies is also available from the Institute for Sustainability and Technology Policy, Murdoch University (<http://wwwistp.murdoch.edu.au>).

The Sustainability Policy Unit identified a number of priority issues requiring research to determine how they were being addressed within Australia and overseas, and what this could mean for Western Australia (see photo opposite). Postgraduate research students and academics prepared background papers (see Appendix C and CD-ROM) by reviewing the relevant literature and meeting with key experts in Western Australia. In most cases this work will contribute to Honours, Masters and PhD theses.

In addition, community leaders, ethicists and religious leaders were invited to prepare papers on the ethics of sustainability. Written submissions were invited from the end of December 2001 to the end of April 2002 and 200 were received. Submission authors are listed at Appendix D. The submissions and a summary are available on the CD-ROM and on the sustainability web site.

Research students who did background papers for the State Sustainability Strategy prepare to go to a Youth Affairs Conference where they ran a workshop on sustainability in May 2002.

Source: Murdoch University

Source: WA Museum

Sustainability WA exhibit

The WA Museum and the Sustainability Policy Unit jointly mounted an exhibit called *Sustainability WA* as part of the MuseumLink programme. The exhibit described the stories of 18 Western Australians who have contributed to sustainability and travelled to 26 regional centres and throughout the metropolitan area. It is estimated that some 90,000 people had an opportunity to see the exhibit. A free-of-charge postcard was provided so anyone could contribute their ideas and 193 postcards were received.
The exhibit is on the WA Museum's web site <http://www.museum.wa.gov.au/museumlink> and on the CD-ROM.

Process to finalise and implement the Strategy

A final Strategy will be developed over the next six months through extensive consultation and engagement with the community, business and government agencies. The main activities are outlined below and regular updates will be provided through the sustainability web site. Please register your interest to be kept informed of the various consultation activities by contacting the Sustainability Policy Unit (contact details provided below).

Written submissions

The draft State Sustainability Strategy is available for public comment and written submissions on the draft Strategy are welcome until 10 January 2003.

Please send your written submission to:

Sustainability Policy Unit
Department of the Premier and Cabinet
197 St George's Tce
Perth WA 6000

Contact the Sustainability Policy Unit on:

Phone: 08 9222 9438
Fax: 08 9222 9509
Email: sustainability@dpc.wa.gov.au
Web site: http://www.sustainability.dpc.wa.gov.au

Public seminars

A new seminar series will be established to generate further engagement and feedback on the draft Strategy. Register your interest in attending by contacting the Sustainability Policy Unit.

Partnership processes

A number of partnership processes have been established to work through proposals and assist with implementing the Strategy. Partnerships with government will be established with local government, peak bodies from civil society, regional organisations, universities and industry.

Final strategy

The final State Sustainability Strategy will be available early in 2003 and will be implemented over the next five to ten years.

The implementation of the State Sustainability Strategy will need to be reviewed over time to ensure it remains effective and to respond to new issues and opportunities that are identified.

> ABOUT THIS DOCUMENT

The draft State Sustainability Strategy is designed to provide background to the concept of sustainability as well as propose actions for sustainability in Western Australia.

The next part (2) of the Strategy document describes the conceptual basis to sustainability and how the Strategy seeks to give the concept meaning in Western Australia. It outlines the sustainability framework adopted in the draft Strategy, including eleven principles and the Western Australian Government's six goals for sustainability. This part also outlines some of the potential sustainability indicators and emerging techniques in sustainability.

The major part of the strategy outlines the priority areas for action in six parts: Sustainability and governance (3); Contributing to global sustainability (4); Sustainable use of natural resources (5); Sustainability and settlements (6) Sustainability and community (7) and Sustainability and business (8). Within these six sections 42 priority areas for Western Australia are addressed. For each priority area, opportunities to progress sustainability are identified and the proposed government actions over the next five to ten years are described. References, where relevant, to further information, including background papers and case studies are provided at the end of each priority area.

Finally, the the main mechanisms proposed in the draft Strategy are summarised and the process of implementation (9) is outlined.

Appendixes list the seminars, case studies, background papers and written submissions.

A list of all the proposed actions are provided at the end of the document.

Quotations

Quotations from written submissions and relevant documents are placed throughout the document to demonstrate the range of views that people held on sustainability and priority issues.

Unless a separate reference is cited, quotes are taken from written submissions which are available on the CD-ROM.

TEXT BOXES

Text boxes appear throughout the draft Strategy to describe examples of where sustainability is being demonstrated in Western Australia, provide more detail on an initiative proposed in the draft Strategy or explore a particular concept in more detail.

CD-ROM

The Sustainability Policy Unit utilised public submissions and research undertaken by university students and other people to prepare the draft Strategy. All of this information is available on the CD-ROM at the back of this document and is also available from the sustainability web site.

Poster

A poster outlining the Sustainability Framework (see part 2) is provided in the inside back cover.

2

The conceptual basis: developing a framework for sustainability

> EVOLUTION OF SUSTAINABILITY

In 1987 the Prime Minister of Norway, Gro Harlem Brundtland, launched the book *Our Common Future* that effectively began the era of sustainability. Prime Minister Brundtland chaired the United Nation's World Commission on Environment and Development ('the Brundtland Commission') which had worked for two years to try and resolve a major problem in global politics: the apparent conflict between the environment and development.

Sustainability as a proposed solution was necessarily an attack on conventional thinking and practice, though not in all interpretations a radical attack. It recognised that it would eventually be suicidal to allow a further undermining of ecological life support systems, locally and globally. But at the same time it demanded development - not just to eliminate destitution and ensure material security but also to allow individuals and communities more choices and more power to exert greater control over the factors affecting their lives. Together these demanded development with sustainability - development pursued in ways that would protect resources and ecological integrity over the long term while greatly improving human well-being, especially among the poor.

RB Gibson[3]

Ecologists around the world had been warning from the 1960's that the earth had reached certain limits:

- human-induced climate change seemed certain as the atmosphere had increased its CO_2 concentration by 28% and certain new chemicals (CFCs) were threatening the ozone layer

- deforestation and land degradation from overgrazing and overcropping were spreading rapidly

- fresh water supplies and groundwater were being depleted and polluted

- human beings across the globe had toxic chemicals in their tissues

- the continued loss of species and threats to important ecosystems was everywhere apparent.

Scientific evidence on the problems was mounting and scientists began to speak out. Ecologists warned that population growth must stop and further economic growth must be prevented as it was driving problems like those listed above. At the same time those in developing countries, faced with continued poverty and deprivation, did not share the ecologists' viewpoint. For them development was essential: they needed food, clean water and shelter. The one billion people living in poverty had a strong case for economic development.

The Brundtland Commission concluded that there ought to be development but it must now be different: it must be *sustainable* development. Development needed to be more directed to meeting the needs of the poor in a way that no longer causes environmental problems but helped to solve them. In other words development must meet the needs of current and future generations through simultaneous social, environmental and economic improvement of the human-ecological system. This would not happen quickly as the world's economy was built around short-term gains that did take into account these long-term issues (see Box 2).

[3] RB Gibson, *Specification of Sustainability-Based Environmental Assessment Decision Criteria and Implications for Determining 'Significance' in Environmental Assessment,* 2001, p. 9, viewed 5 August 2002, <http://www.sustreport.org/downloads/Sustainability,EA.doc>

BOX 2   THE GLOBAL NEED FOR SUSTAINABLE DEVELOPMENT: TIME TO RE-EXAMINE THE FUTURE

Emeritus Professor Ian Lowe is working with the Environmental Protection Authority to prepare a position paper, entitled *Towards Sustainability*, from the perspective of the Environmental Protection Authority. A section in the position paper will highlight global environmental issues.

- Nearly 50% of the earth's land surface has been transformed for human activity.

- More than half of the earth's accessible fresh water is now being used, directly or indirectly.

- More nitrogen is being fixed synthetically in fertiliser than naturally.

- More than half of all mangroves and coastal wetlands are lost.

- The rate of species extinction is between 1,000 and 10,000 times what it would be naturally.

- In the second half of the twentieth century the human population doubled but grain production trebled, energy use quadrupled and economic activity quintupled.

- Although the world economy has grown from US$5 trillion over the last 50 years, the number of people who live on US$1-2 a day is projected to increase from two to four billion within the next 25 years.

- Global oil production is nearing its peak with nine barrels consumed for each one discovered.

- The global atmosphere has increased in greenhouse gases by 28% over the past 130 years and has reached a point where noticeable and sustained climate change is now occurring.

- The global loss of land to salinity and other land degradation is around 12 million hectares per year, about the size of the Wheatbelt.

I Lowe. *Towards Sustainability*, 2002, unpublished.

The United Nations began a long-term project to make the global economy more sustainable. The United Nations Conference on Environment and Development was held in 1992 in Rio de Janeiro, Brazil, to coincide with the 20th anniversary of the first international Conference on the Human Environment in Stockholm. A detailed program of action for the 21st century, *Agenda 21* was agreed at the Rio Conference. Negotiations on an international agreement on climate change commenced at this conference (which led to the Kyoto Convention) and agreements on forestry and biodiversity were initiated.

Australia responded to the global call for sustainability by developing the *National Strategy for Ecologically Sustainable Development* (ESD) between 1989 and 1991. Twelve working groups examined every aspect of the Australian economy in terms of the new ESD principles. Little immediate action was taken on these reports, though the ideas developed began to spread as state and local government started to take the concept seriously. The 1996 and 2001 Australian State of the Environment Reports also contain many ideas on how sustainability can be addressed in Australia.

The global sustainability process continues to evolve and expand. The World Summit on Sustainable Development convened from 26 August to 4 September 2002 in Johannesburg. At this time the nations of the world reported on progress towards sustainability. At the same time hundreds of non-government organisations and business groups shared information and assessed progress. For example, the World Business Council on Sustainable Development (including the Minerals, Mining and Sustainable Development process) reported on how companies are responding to sustainability. Thousands of local governments reported on how they have implemented Local Agenda 21 and the Cities for Climate Protection Program.

Western Australian Governments have considered sustainability over the past decade but the Labor Government was elected with a strong set of commitments to produce a sustainability strategy across the whole of government.

Box 3 demonstrates why Western Australian must pursue a sustainable future.

BOX 3   THE WESTERN AUSTRALIAN SITUATION

Examples of Western Australia's significant environmental and social issues include:

- 4.4 million hectares are affected by salinity or at risk of further salinisation and this could double over the next 50 years
- rainfall runoff in the South West of Western Australia has reduced by 50% over the past 25 years partly due to greenhouse induced climate change
- salinity and overgrazing threaten about one quarter of endangered plant species
- South West Western Australia ranks twelfth out of the world's 25 most significant biodiversity 'hotspots'
- Western Australians, consume a lot of resources especially water, land and transport energy
- health and social indicators reveal high levels of deprivation in Indigenous communities
- the population and economies of many rural communities and parts of Perth are in decline with consequent social and environmental problems

What sustainability means

In this draft Strategy, sustainability is defined as *meeting the needs of current and future generations through simultaneous environmental, social, and economic improvement.* [4]

The definition of sustainability, interpreted literally, is very challenging. It implies that an activity that only meets two of the factors simultaneously (say economic and social but 'trades off' the environment) is ultimately not sustainable.

Sustainability is sometimes described as the 'triple bottom line', to reflect the importance of environmental, social and economic factors in decision-making. However, the definition proposed here goes beyond the triple bottom line through emphasising the importance of integration between these factors and achieving them simultaneously. The draft Strategy demonstrates where this is occurring already and identifies opportunities to support the transition to a more sustainable future through strategic action in 42 priority areas.

There is considerable discussion about the meaning of sustainability, particularly in academic and professional circles. Pezzoli[5] has found ten types of definition on sustainability in four key areas of concern. For many, the difficulty in pinning down a precise meaning is reason enough for them to consider that the concept has no relevance.

Such dismissal misses the point. The concept has not come from academia or the professions, it has come from global politics as a way of asking the world to resolve a fundamental tension that has developed between environmental, social and economic improvement. The resolution of this tension is the challenge for sustainability.

The concept of sustainability is simple but implementation is difficult. New Zealand academic Professor John Peet[6] described the problem of ascribing meaning to sustainability as similar to trying to analyse the meaning of love or hope. These words, he says, are dialectical; they become meaningful mostly when applied. Sustainability is fundamentally a 'fuzzy' concept when analysed by itself. It begins to make sense when it is applied to specific issues, such as land management, energy, settlements, projects or specific communities.

This strategy seeks to give sustainability meaning for Western Australia: its regions, its issues, its projects, its communities. It accepts that there are tensions between economic, environmental and social goals and seeks to resolve them through finding mutual benefit.

Character of the strategy

When the United Nations World Commission on Environment and Development defined sustainability in 1987 the world was facing a major environmental dilemma. The debate was largely about resolving how development could be environmentally responsible. Although the debate also considered how development could be socially responsible, the environment was the overwhelming focus for government and industry in the 1990s.

[4] This is a different definition than that proposed in the consultation paper for the State Sustainability Strategy. That definition included reference to simultaneously meeting social, environmental and economic *goals* and did not refer to *needs.* The current definition responds to the views expressed in many written submissions which suggested that the definition of sustainability must include the notion of genuine need and that the use of the word goals made the definition unnecessarily ambiguous.

[5] K Pezzoli, *Sustainable development: a transdisciplinary overview of the literature,* 1996, Paper at joint international congress of Collegiate Schools of Planning and the Association of the European Schools of Planning, Toronto, July.

[6] J Peet, Sustainable Auckland Conference, 2001. Auckland Regional Council, Auckland, September.

Many submissions acknowledged the need for more integrated approaches, suggesting that the greatest need is to find out how to integrate social needs and processes into sustainability.

Significant attention and progress has been made in resolving the dilemma between environmental protection and development. Techniques have been developed like environmental assessment, eco-efficiency, green procurement, zoning land for environmental purposes, renewable energy facilitation and regulation of pollution. Much less progress has been made on resolving the social aspects of development.

The State Sustainability Strategy attempts to incorporate the social dimension into sustainability by demonstrating that it is possible to create a stronger economy and a healthier environment by more fully integrating the social dimension. It suggests that by thinking differently and more inclusively, the 'deep clues' as to how to resolve fundamental environmental and economic conflicts can be discovered. The solutions are not to be found only in environmental science and engineering, but in the social sciences, humanities and business.

A number of submissions suggested the sustainability consultation document did not sufficiently emphasise the economic dimension of sustainability. The sustainability agenda was created to find ways of incorporating environmental and social considerations into the economic development process, recognising that they are not subservient but mutually supportive. While the economic side of development and decision-making is well entrenched, globally and locally, nevertheless at times an environment-dominant perspective has replaced an economic-dominant perspective, instead of integrating the two perspectives. The State Sustainability Strategy explores how these perspectives can be integrated.

The social and economic agendas also frequently overlap, for example creating jobs in regional areas or for particular groups like Indigenous people achieves a simultaneous economic and social gain. However the achievement of social goals can never be assumed merely because economic development is possible.

These kinds of integration–where environmental, social and economic factors begin to mutually reinforce each other–are often found in situations where business, communities and governments form creative partnerships.

The Case Studies in Sustainability developed as background to this Strategy[18] bears testament to this process. The character of the State Sustainability Strategy is one of establishing processes where people can enter dialogue about issues to enable creativity and partnerships to flourish.

Opportunities for sustainability

The approach adopted within the State Sustainability Strategy recognises that while there are many economic opportunities, not all of these are socially and environmentally responsible.

Australia has developed in the context of centuries of debate and criticism about the way in which development has occurred. These include economic opportunities based on slavery, child labour, excessive working hours and dangerous work practices. Australia and the world is now incorporating the ideas of sustainability and other insights (especially from Indigenous cultures) into decision-making. This means that certain economic opportunities are no longer pursued. The end of logging in Western Australia's old growth forests is one example of where this has occurred in recent times. The growing community concern to protect coastal areas from unsustainable development is another. Sustainability is not about halting progress but it does demand that we take a deep breath and think again about particular issues.

The pursuit of sustainability provides many new economic opportunities. The fastest growing sector of the global economy is the development of environmental technology, estimated conservatively to be worth $1 trillion annually. United Kingdom Prime Minister Tony Blair calls this the 'sustainability revolution'.

The State Sustainability Strategy assists Western Australia to become part of this global revolution and every issue considered in this Strategy has a section that considers opportunities in Western Australia for global sustainability.

[18]<http://www.sustainability.dpc.wa.gov.au/docs/CaseStudies.htm>

Ethics and sustainability

There has also been a growing awareness that sustainability is an ethical issue, particularly in the business sector. A set of background papers considering ethics and sustainability was collected from a diverse range of ethicists, philosophers, creeds and religions (see Appendix C and the CD-ROM).

Several common threads can be seen to unite them and each provide a sense of hope that sustainability is worth pursuing. They show that human beings can be better stewards of the natural world and society–perhaps more so than they have over the past few centuries. The sustainability principles used in this document resonate with the approaches suggested in the background papers.

Source: Midwest Development Commission

A sustainability framework

How can the Western Australian Government approach sustainability? The first step has been to create a framework for thinking and decision-making.

The concept of sustainability is simple but it is difficult to implement because of our tendencies to work in isolation. Most professions, corporations, institutions and government practices around the world have been built around the separation of the environmental, social and economic dimensions with economic factors being the dominant consideration. Sustainability is challenging everyone to find a new way of approaching the future. Western Australia is joining this process. It can only do this if there is a re-evaluation of the principles, visions and goals that guide how we operate.

The draft Strategy proposes a set of sustainability principles that guide the way in which government, industry and communities should think about and approach the management of resources. These principles are aimed at facilitating change that has net social, environmental and economic benefit for current and future generations. Sustainability principles will underpin the State Strategic Plan and other government policies such as the Regional Policy Statement.

The sustainability framework consists of:

• seven foundation principles and four process principles that reflect the core values of sustainability

• six visions for Western Australia's sustainability

• six goals for government and forty-two priority areas for action.

The framework is described graphically through the pullout poster at the back of this document and the linkages between the three areas of the framework are illustrated in Figure 1.

Figure 1: The Sustainability Framework

Sustainability principles

Sustainability principles have often been developed through global agreements and have begun to be placed in legislation over the past decade in Australia and overseas. These principles often do not incorporate the social aspect of sustainability and rarely the economic. Therefore the draft State Sustainability Strategy deliberately attempts to incorporate the social and economic dimensions into the proposed sustainability principles.

The first seven principles in the draft Strategy are foundation principles that establish the basis of sustainability through long-term economic health (see Box 4), equity, ecological integrity, efficiency (see Box 5), community, net benefit and common good. The last four principles are process principles that stress the need for integration, transparency and engagement, precaution and gradual change towards a broad vision.

FOUNDATION PRINCIPLES

Long-term economic health

Sustainability recognises the needs of current and future generations for long-term economic health, diversity and productivity of the earth.

Equity and human rights

Sustainability recognises that an environment needs to be created where all people can express their full potential and lead productive lives and that significant gaps in sufficiency and opportunity endanger the earth.

Biodiversity and ecological integrity

Sustainability recognises that all life has intrinsic value, is interconnected and that biodiversity and ecological integrity are part of the irreplaceable life support systems upon which the earth depends.

Settlement efficiency and quality of life

Sustainability recognises that the earth can only adjust to a more balanced state if settlements reduce their ecological footprint (ie. less material and energy demands and reduction in waste), while they simultaneously improve their quality of life (health, housing, employment, community...).

Community, regions, 'sense of place' and heritage

Sustainability recognises the significance and diversity of community and regions for the management of the earth, and the critical importance of 'sense of place' and heritage (buildings, townscapes, landscapes and culture) in any plans for the future.

Net benefit from development

Sustainability means that all development, and particularly development involving extraction of non-renewable resources, should strive to provide net environmental, social and economic benefit for future generations

Common good from planning

Sustainability recognises that planning for the common good requires equitable distribution of public resources (like air, water and open space) so that natural carrying capacities are not exceeded and so that a shared resource is available to all.

PROCESS PRINCIPLES

Integration of the triple bottom line

Sustainability requires that economic, social and environmental factors be integrated by simultaneous application of these principles, seeking mutually supportive benefits with minimal trade offs.

Accountability, transparency and engagement

Sustainability recognises that people should have access to information on sustainability issues, that institutions should have triple bottom line accountability, that regular sustainability audits of programs and policies should be conducted, and that public engagement lies at the heart of all sustainability principles.

Precaution

Sustainability requires caution, avoiding poorly understood risks of serious or irreversible damage, designing for surprise and managing for adaptation.

Hope, vision, symbolic and iterative change

Sustainability recognises that applying these principles as part of a broad strategic vision for the earth can generate hope in the future, and thus it will involve symbolic change that is part of many successive steps over generations.

BOX 4   BALLIOL AND ARALUEN: LONG-TERM THINKING

Horticulturalist, ABC TV weather presenter and Araluen Foundation President John Colwill tells a story about sustainability thinking in action and the importance of long-term thinking.

Balliol College at Oxford University discovered that beetles were eating the oak superstructure of its dining hall. The great beams of oak were 500 years old and the engineers suggested that they should be replaced but oak trees of sufficient size were no longer available. It appeared that the engineers would have to come up with an alternative. Fortunately the master of Balliol mentioned the problem to the head gardener who responded, 'We was wondering when you was going to ask sir. 500 year ago we planted a forest just for this purpose. It's ready now.' So, thanks to considerable foresight, Balliol College was able to replace its beautiful oak structure.

The Araluen Botanic Park Foundation recently refurbished the park's massive memorial pergola with old growth jarrah and realised that such timber is unlikely to be available in the future. Taking a leaf from the Oxford gardeners they have set aside some land and planted it with jarrah. The trees are protected by a covenant that dedicates them for use in the Park's maintenance programmes over the next 50 to 100 years.

Source: John Colwill

BOX 5   RESOURCE USE AND SUSTAINABILITY

One of the key characteristics of sustainability is the decoupling of resource use and wealth. For most of the past two hundred years it has been assumed that as wealth increases then so will the consumption of resources such as energy, minerals, water and land.

Although the benefits of decoupling this relationship can be easily seen at the individual level of a firm or a household, where using fewer resources costs less, the situation is less obvious at a societal level. Sustainability has helped to show that this link can and should be uncoupled after a certain minimum level of material prosperity is achieved. The process has been clearly demonstrated with electricity consumption in the past few decades where in many developed countries per capita wealth has grown but electricity per capita has declined. This has corresponded with the change to the knowledge economy.

In Australia, a similar situation applies with water use. In the past 10 to 15 years most Australian cities have reduced per capita water consumption, except Perth where this occurred in the previous decade. The consumption of water demonstrates that demand management has reduced the use of water at the same time as our economic health has improved.

In cities, land consumption per capita used to parallel wealth per capita, that is, wealthier people chose bigger blocks and lived further and further out of the city. This has reversed in the past decade with increased demand for smaller blocks closer to the city. This has resulted in reduced transport energy, not only due to the shorter distances travelled, but from improved public transport and easier walking and cycling[7]. The equity aspects of these trends are considered under *Sustainability and settlements.*

Extraction of minerals continues to increase as the world grows in population and wealth. However, there is the potential for this to slow as patterns of consumption begin to reflect the cleverer use of resources, more recycling, a reduced priority on consumption and slowing growth in population (as discussed in Contributing to global sustainability: Population, development aid and environmental technology).

In general terms, the same could also apply to agriculture. The viability of Western Australia agriculture has been under consideration for some time as terms of trade for agriculture have been declining for decades.

The trend towards decoupling resource use and consumption provides two important policy considerations:

- the need to diversify the economy and embrace the knowledge economy more fully and directly
- the need to constantly demonstrate the sustainability of our primary production.

Both are pursued in the draft Strategy.

Around the world increasingly knowledgeable purchasers tuned into sustainability will look for products that are 'clean and green' and add social criteria to their consumption choices. As has occurred with forest products, people will increasingly choose not to buy products that they perceive are produced unsustainably. Western Australian companies have an opportunity to win markets in the future not just through competitive pricing but also through demonstrating sustainable quality production.

[7] P Newman and J Kenworthy, *Sustainability and Cities*, 1999, Island Press, Washington.

SUSTAINABILITY VISIONS FOR WESTERN AUSTRALIA

Based on these eleven principles it is possible to approach any sustainability issue whether it is to do with a firm, an institution or a state like Western Australia. The State Sustainability Strategy has suggested that these principles mean Western Australia needs a set of visions for governance, global contributions, natural resources, settlements, community and business. By establishing these visions the sustainability principles begin to become more practical.

Governance

Western Australia's system of governance is world famous for being responsive to sustainability issues, effective and financially responsible in its programs, transparent and inclusive in its processes and reflects its globally significant responsibilities towards the land and its people.

Global contributions

Western Australia contributes to the solution of global sustainability issues particularly population pressures and poverty, climate change, threats to biodiversity and oil vulnerability and in so doing creates significant local opportunities for new jobs in the rapidly growing sustainability economy.

Natural Resources

Western Australia's vast landscape, intricate web of biodiversity and natural resources are managed and used sustainably for the common good closely involving the community in management and planning processes that are transparent and visionary.

Settlements

Western Australia's settlements are among the most attractive places to live in the world, constantly becoming more innovative and efficient in their use of resources and management of wastes while simultaneously being more liveable and equitable.

Community

Western Australian communities in cities and in regions have a strong sense of place, supportive networks receptive to local needs, and through this respond uniquely to the sustainability agenda.

Business

Western Australian businesses, large and small, are globally innovative and responsive, leading to the resolution of sustainability issues at home and abroad and achieving competitive advantage and prosperity.

Once the visions are in place the necessity is to see what they can mean for the government. What should be the government's goals to deliver such visions and what are the priority areas for action to achieve them?

SUSTAINABILITY GOALS AND PRIORITY ISSUES FOR GOVERNMENT

The State Sustainability Strategy has six goals which together guide government action towards achieving the visions for a sustainable Western Australia. The priority areas for sustainability in Western Australia are listed under each goal. Each of the Goals corresponds to a section of the draft Strategy.

Goal 1 Ensure that the way we govern is driving the transition to a sustainable future

Sustainability assessment
Institutional change
Embracing sustainability in government agencies
Partnerships for action
Planning for sustainability
Sustainability in the regions
Indigenous communities and sustainability
Research and development for sustainability
Sustainability information online
Recognising sustainability excellence

Goal 2 Play our part in solving the global challenges of sustainability

Population, development aid and environmental technology
Maintaining our biodiversity
Responding to greenhouse and climate change
Oil vulnerability, the gas transition and the hydrogen economy

Goal 3 Value and protect our natural environment and ensure the sustainable management of natural resources

Sustainable agriculture
Sustainable fisheries and aquaculture
Sustainable forests and plantations
Sustainable mining and petroleum production
Sustainable tourism
Protecting aquatic systems
Sustainable coastal and marine environments
Sustainable rangelands management

Goal 4 Plan and provide settlements that reduce the ecological footprint and enhance quality of life at the same time

Managing urban and regional growth
Revitalising declining centres and suburbs
Integrating land use and balanced transport
Managing freight and regional transport
Preserving air quality
Reducing and managing waste
Our water future
Sustainable energy
Preserving cultural heritage and landscapes and creating 'sense of place'
Building sustainably

Goal 5 Support communities to fully participate in achieving a sustainable future

Community services and development
Housing and sustainability
Sustaining healthy communities
Education and community awareness for sustainability
Sustainability through culture and the arts
Multiculturalism and sustainability

Goal 6 Assist business to benefit from and contribute to sustainability

Training and facilitation for sustainability
Financial reform and economic instruments for sustainability
Eco-efficiency and industrial ecology
Industry sustainability covenants

Key indicators and targets for sustainability

Over the past five years there has been extensive work at the international, national, state and local levels to develop indicators and targets for sustainability. For example, the United Nations has been developing global indicators for sustainable development (<http://www.un.org/esa/sustdev/isd.htm>) and in 2002 the Australian Government issued its first report on the National Headline Indicators for Sustainability (<http://www.ea.gov.au/esd/national/indicators/index.html>).

However, in most cases existing indicators do not adequately integrate social, economic and environmental aspects of sustainability.

The headline sustainability indicators outlined in Table 1 are designed to provide an overall guide for how Western Australia should be trying to move. They reflect the definition of sustainability and also relate to the sustainability principles. The real test for sustainability indicators is that they are achieved *simultaneously* through economic development, community action and government activity. Additional work will be required to develop a suitable set of integrative headline sustainability indicators for Western Australia.

Suggested indicators and targets are also provided for each of the priority areas considered in the draft Strategy to assess progress against objectives.

Table 1. Examples of integrative headline sustainability indicators		
Sustainability	**Indicator should Measure**	**Measured by**
Wealth increasing	All economic activity and also how wealth is distributed (as in Principles 1 and 2).	Gross State Product per capita or when it is available the Index of Economic Welfare - (GSP amended to exclude negative externalities like road accident costs, crime costs). Distribution is measured by a Gini index.
Ecological footprint decreasing	Energy use, waste, land & water use (as in Principles 3 and 4).	Ecological footprint index per capita as measured in the Australian State of Environment report.
Social capital increasing	Strength of community networks and interaction (as in Principles 5, 6 and 7).	Social capital index as used by Health Department or by a more fully developed index as suggested by the Western Australian Council of Social Services.
Sustainability governance improving	Extent to which sustainability is embedded in government (as in Principles 8, 9, 10, and 11).	Numbers of sustainability action plans, sustainability assessments conducted and sustainability annual reporting by agencies (combined index).
Sustainability awareness increasing	Extent to which community is aware of local and global sustainability issues (as in Principles 5 and 7).	New index based on a survey of selected key sustainability issues to test for awareness and interest in issues.

BOX 6 TECHNIQUES FOR SUSTAINABILITY

Increasing effort is being directed to developing a set of practices or techniques for sustainability. A number of the techniques relevant to Western Australia and currently in use by national, state and local governments and progressive industries and businesses are listed below. Many of these techniques are designed to aid in decision-making.

The State Sustainability Strategy advocates the demonstration of these innovative techniques through pilot projects prior to their broader application to programs, policies and legislation.

Ecological economics
Seeking economic valuation of environmental and social assets and services, the 'polluter pays' principle, the need for full life cycle costing of goods and services (including asset replacement and waste disposal) and incentive mechanisms for achieving sustainability goals.

Eco-Efficiency, industrial ecology and waste minimisation
Reducing resource requirements in industrial processes, exchanging wastes for resource needs in industrial estates, minimising waste through recycling and re-use, and seeking zero waste discharge.

Facilitating sustainable technology options
Facilitating renewable energy, energy efficient modes of transport, resource efficient appliances and buildings, and other sustainable technology by providing the infrastructure and increasing the ability of people to choose these options.

Multi-criteria analysis
Assessment of options by listing criteria, measuring these where possible or rating them where not, weighting the criteria through community involvement, and providing integrated options from the analysis.

Voluntary partnerships
Providing partnership agreements between all levels of government and between business, the community and government to provide voluntary commitments to mutually beneficial solutions.

Breaking down barriers
Seeking holistic solutions through breaking down the barriers between different disciplines, different professions and different government agencies

Regulation, enforcement and opportunity
Providing enforceable regulation to ensure common good outcomes in such a way that they form the basis for new economic opportunities.

Strategic and statutory plans
Providing long-term visions from transparent and fully engaging community processes to provide achievable, organic steps towards sustainability goals, with the detailed frameworks that express common good outcomes being laid out in statutory plans.

Community development processes
Enabling community-based solutions through development approaches that recognise the inherent ability of local people to be creative and innovative and which assist through the removal of barriers and provision of access to information and resources.

Artistic innovation
Facilitating artistic creativity focused on the changes required in unsustainable elements of our culture, community and a greater sense of place.

Scenario planning
Creating alternative future visions with linkages to the present through 'backcasting' to the first steps for change.

Value frame analysis
Analysing the different value frames used by various parties in dispute over a sustainability issue to find common ground for a solution.

Education
Providing sustainability education (formal and informal), training and accreditation of all professional activity that recognises and increases awareness of sustainability principles and how they can be applied in daily life.

Research, innovation and demonstration
Facilitating solutions to long-term issues with significant environmental, social and economic outcomes through scientific research and commercial development on sustainability issues, as well as the use of social demonstration projects to enable innovations in sustainability to be trialled.

3 Sustainability and governance

Vision for Western Australia

Western Australia's system of governance is world famous for being responsive to sustainability issues, effective and financially responsible in its programs, transparent and inclusive in its processes and reflects its globally significant responsibilities towards the land and its people.

Goal

Ensure that the way we govern is driving the transition to a sustainable future.

Government needs to show leadership on sustainability. This is a global theme that was echoed time and again in the public submissions.

[

Government should be giving leadership. It should be constantly raising the profile of sustainability, annunciating a vision for the future. All government departments should be taking the lead to improve their economic, social and environmental performance in a demonstrable manner i.e. Government should be actually "walking the talk" in sustainable practices, soon rather that later.

Australian Corporate Citizenship Alliance, Western Australia

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[

Government has a leadership role to play and to ensure that mechanisms are in place for all relevant government departments to have a consistent vision, commitment and approach towards the attainment of sustainability, along with clear channels of communication. In Western Australia, restructuring and the combining of natural resource management agencies such as the Department of Environmental Protection (DEP) and the Water and Rivers Commission (WRC) is a positive move towards integrating institutions and establishing a consistency in governance toward sustainability.

Eastern Metropolitan Regional Council

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[

Governments can achieve a significant amount, by the example of how they operate their own organization, the policies they pursue and by the leadership they show to others…because of the importance we attach to strong and clear leadership from government, we recommend the Government uses its own Sustainability Strategy document to send the clearest possible signal about the future direction of WA.

BP Australia Ltd

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This section proposes governance arrangements to support sustainability within the Western Australian Government and its agencies, with local government and other stakeholders, at the regional scale and in support of Indigenous sustainability. The section begins with the emerging area of sustainability assessment. It then describes how government agencies must operationalise sustainability in their planning, decision-making and day-to-day activities. It proposes institutional reform for sustainability, discusses the importance of research and development for sustainability and of recognising sustainability achievement.

Local government has a critical role in planning and decision-making for sustainability and many sustainability issues are best addressed at this level. A State-Local Government Sustainability Roundtable will be created to develop a common sustainability framework while the draft Strategy is being finalised. This will lay the foundation for a genuine partnership between state and local governments for sustainability, in particular through the planning system. The planning system is discussed in some detail as a possible statutory mechanism for implementing responses to many sustainability issues at the local and regional levels.

In recognition of the diversity within Western Australia and the government's commitment to the regions, this section proposes the development of Regional Sustainability Strategies, and describes possible future roles for Regional Development Commissions. Regional Councils (groups of local governments) are highlighted as important processes for implementing the State Sustainability Strategy.

The Western Australian Government has recognised the rights of Indigenous people through its Statement of Commitment to a New and Just Relationship, jointly signed by the government and the Aboriginal and Torres Strait Islander Commission in 2001. Building on this, the draft Strategy describes how the government will undertake to support the pursuit of sustainability for Indigenous communities.

> SUSTAINABILITY ASSESSMENT

Sustainability assessment is a new process that provides integrated advice to provide net benefit outcomes. The government will build on environmental impacts assessment to develop sustainability assessment of projects, plans, policies and programs as well as legislation, Cabinet submissions, corporate plans and proposed government agreements.

> *Sustainability-based environmental assessment is certainly different from the more common, narrower exercises that typically consider only some aspects of environment and focus chiefly on negative effects. It is more ambitious, more demanding and much more positive. But it is also, in important ways, not a huge step from present practice and present capabilities.*
>
> RB Gibson[8]

The Western Australian Government was elected with a commitment to improve decision-making processes across government through greater integration. In particular there is a commitment to establish a mechanism for sustainability assessment that would build upon the state's strong record in environmental impact assessment. The recently released Final Report of the Review of the Project Development Approvals System (Keating Review) has also highlighted the need for a coherent sustainability assessment framework for state significant projects in Western Australia. The review noted that most submissions in response to its interim report were supportive of establishing such a framework but not for smaller projects.

The establishment of a sustainability assessment process will be a major step forward in simplifying and creating a more effective decision-making process. It is not an easy process to change due to the silos of government and disciplines of professions. It will require slow and careful trials to establish the processes and a long-term commitment to build capacity across government and society.

There are innovative companies in the private sector already using sustainability assessment as an internal mechanism for decision-making due to the value in integration and holistic perspective (see Box 7 on Hamersley Iron).

Sustainability assessment is already beginning in government but until it is a fully developed, integrated process it is likely to be limited to consideration of separate environmental, social and economic factors. This is best labelled 'triple bottom line' assessment. Sustainability assessment integrates these factors at the start and throughout the assessment process with clear goals and outcomes guiding the process.

While government will move to establish the institutional and legislative basis for sustainability assessment, it is proposed that transitionary arrangements be put in place to enable important government decisions to begin to be assessed in this way. Important experience can be gained in the interim arrangements as set out below.

The character of sustainability assessment

Sustainability assessment is not meant to provide another set of barriers or 'hoops to jump through' for proponents seeking approval for projects, plans, policies and programs. Sustainability assessment will make transparent the kind of social and economic issues that government must take into account when considering a project, plan, policy or program.

Government often considers social and economic issues (along with formal environmental assessment conclusions) but these considerations are not necessarily transparent and are rarely integrated. This generally means that government sometimes has to make difficult decisions, involving significant tradeoffs between social, economic or environmental factors. Sustainability assessment is designed to work through the social and economic issues in a transparent way (similar to that for environmental considerations) and then to find integrated solutions where tradeoffs are minimised or non-existent wherever possible. It is about 'win-win-win' or net benefit.

Sustainability assessment is emerging as a way to improve decision-making on complex projects, plans, policies and programs with opportunities for public engagement. It not only offers the potential to resolve apparently deep conflicts and minimise potentially harmful impacts, it has the potential to provide clear, positive benefits. It is a new paradigm in assessment and therefore requires a new framework to be developed for guiding decision making.

BOX 7   HAMERSLEY IRON'S SUSTAINABILITY ASSESSMENT PROCESS

Hamersley Iron has recently adopted an internal decision-making process based on sustainability assessment. The key idea is to try and find net benefit in the social, environmental and economic areas in an integrated way.

An example is an assessment that was conducted on the management of the company's pastoral leases in the Pilbara. The question was whether to operate these leases to maximise yields of cattle, relinquish them to achieve social and environmental benefit only, or consolidate them with a balance of these goals. The process involved detailed interviews with over 30 stakeholders from government, Hamersley Iron, community and industry groups. The results were put into a 'spider web' decision-making diagram where the results on each issue were either positive or negative along an axis (based on the strength of responses given in the interviews). The distance along the line in a positive or negative direction could then be added to give an overall social result, an overall economic result and an overall environmental result.

The first attempt did not show any of the three management options as having net benefit on all three factors. Potential mitigations were developed and the options were presented to stakeholders again. This time a clear result for the consolidated option came through with net benefit in all three areas.

The company has since applied the technique to a much more complex mining decision and also found that the first options were not acceptable in this sustainability framework. After modification an option was found that solved this problem. Technical assessment of this option is now underway. This option could then be taken to the Board and eventually to government for their approval processes. Hamersley Iron acknowledges the need to refine the process but will not be returning to simple models of the 'single bottom line' again.

Source: Bruce Larson, Hamersley Iron

The sustainability assessment framework

Sustainability assessment builds on the sustainability framework outlined previously and has the additional elements of criteria, assessment techniques, procedures and guidelines. A discussion of the emerging procedures and techniques associated with sustainability assessment is provided in the background paper by Kathryn Buselich *An Outline of Current Thinking on Sustainability Assessment* (see CD-ROM).

Table 2 below sets out a series of criteria that could be used in the process of a sustainability assessment. These are derived from and supplement the sustainability principles within the sustainability framework. The two columns show the major differences in approaches to assessment: one is to minimise the negative impacts of a project, plan, policy or program; the other is to promote the positive outcomes. The first approach is what is usually called 'impact assessment' and the second describes how the 'sustainability assessment' approach would work.

Table 2. Possible criteria for sustainability assessment of projects, plans, policies and programs.	
Managing the negative	**Promoting the positive**
Provides short-term gain but long-term economic gain is uncertain.	Provides both short and long term economic gain.
Minimises impacts on access, equity and human rights in the provision of material security and effective choices.	Increases access, equity and human rights in the provision of material security and effective choices.
Minimises the damage to biodiversity, ecological integrity and life support systems.	Improves biodiversity and ecological integrity and builds life support systems.
Minimises the increase in ecological footprint while improving quality of life.	Reduces ecological footprint while improving quality of life.
Minimises impacts on community and regions, 'sense of place' and heritage protection.	Builds up community and regions, 'sense of place' and heritage protection.
Minimises conservation loss and social impact while providing economic benefit.	Provides conservation benefit and net social-economic benefit.
Minimises the reduction of 'common good' resources.	Increases 'common good' resources.
Minimises the risks which are not understood.	Ensure there are acceptable levels of risk with adaptation processes for the worst scenarios.
Brings change without hope for the future as it is not part of a broader strategic vision.	Brings change and a sense of hope for the future as it is linked to a broader strategic vision.

There are many techniques to aid decision-making which integrate social, economic and environmental factors and can incorporate the principles of sustainability. There is no single preferred approach and each jurisdiction must build on the unique legislative and institutional machinery in assessment as well as the collective experience and capacity in the community, industry and government agencies.

A number of industries have already begun doing sustainability assessment as part of their internal decision making (see Box 7 on Hamersley Iron and the case study on Argyle). The techniques of integration need to be discussed between those industries grappling with the issue, consultants, academics, community groups and government agencies. A working group to facilitate this process is recommended.

Western Australia has a strong base in environmental impact assessment with some experience in strategic environmental assessment. The government has capacity in economic assessment though it is not clearly linked to environmental assessment. However, social assessment is not well established in government with the last concerted effort being phased out in 1993. There have been some recent examples of multi-criteria analysis that has shown how planning can involve a transparent process of sustainability assessment. These strengths and weaknesses have informed the recommendations on institutional change here and in following sections.

Arrangements for sustainability assessment

Sustainability assessment involves gathering information about the impact of the project, plan, policy, policy or program (PPPP) against relevant sustainability principles and government goals. Once that information has been collected, an assessment can be made as to whether the PPPP has an overall net benefit relative to other alternatives.

It is recognised that some PPPP may have an adverse impact on some sustainability principles and that some trade-offs are inevitable. In short, a PPPP will be acceptable as long as it does not compromise the government's ability to achieve any of its sustainability principles and it has a greater net benefit than alternatives when all relevant economic, social and environmental factors are taken into account.

In particular there is a need for three Sustainability Assessment Units to provide capacity for the implementation of sustainability assessment within the areas of environmental, social and economic sustainability. The three Sustainability Assessment Units will be established within:

- Environmental Protection Authority Services Unit with responsibility for environmental assessments related to sustainability

- Department for Planning and Infrastructure with responsibility for social assessments related to sustainability

- Department of the Treasury and Finance with responsibility for economic assessments related to sustainability.

These units will need to liaise closely with each other and with other relevant agencies with experience on the particular PPPP under consideration.

The Environmental Protection Authority publicly assesses the environmental impacts of significant projects. The links between these environmental assessments and the other social and economic areas are not made but will need to be if sustainability assessment is to be progressed. There has until recently been no attempt to publicly assess the economic and social impacts of major proposals. In the last few months the government has started to fill this gap, in the case of the Gorgon project in respect to the use of Barrow Island for project development. This is occuring through the Office of Major Projects preparing a social-economic-strategic assessment for public comment along with the Environmental Protection Authority's environmental assessment.

Transitionary arrangements

Projects

In relation to projects, sustainability assessment can begin on two fronts: the departmental level and state significant projects.

Projects handled at a departmental level

Every department needs to develop its own expertise and capacity to handle sustainability assessment of day-to-day projects. Agencies will need to develop a social, environmental and economic checklist and a range of techniques that can help to integrate these.

For example, Main Roads WA use an assessment technique for all projects that initially considered environmental and economic factors and is being expanded to include social aspects. Another sustainability assessment is required at the level above this to consider all projects and prioritise them. The Minister for Planning and Infrastructure is developing a portfolio-wide response to integrated funding of planning and infrastructure (see Table 3).

Table 3. Proposed funding criteria for sustainability assessment of all projects in Planning and Infrastructure portfolio.

Goal	Strategic Direction	Objective/Outcomes
Economic	Economic	Wealth Creation International Competitiveness Shared benefits to the community Secures jobs - long term High benefit cost ratio
Environment	Environment	Maintains ecological processes Improves use of natural resources (energy) Enhances natural and built environment Supports bio-diversity
People and Communities	Accessibility	Enhances transport choices Provides basic level of access Accessible for people with disabilities
	Social inclusion	Enhances vibrant communities
		Supports Indigenous communities
	Safety and health	Transport safety impacts Physical activity impacts Health impacts (third parties)
Governance	Integration	Land use/ transport synergy Integrates transport modes Whole of government policies
	Financial	Internal rate of return
		First year rate of return
	Community involvement	Meets community needs Involves public Uses transparent process

State significant projects

Not all large projects could begin to be assessed using sustainability assessment as the processes are yet to be properly developed. It is proposed that sustainability assessment will begin by focusing on state significant projects, as set out by the Review of Project Development Approvals System. These are projects with a high level of formal environmental assessment or are of significant public interest.

This is presently occurring with the assessment of the Gorgon Project. This is the first attempt to integrate environmental, social and economic considerations into a formal process. A public scoping document, called a sustainability statement, has been developed addressing these three dimensions and a process of public consultation is underway. The integration of these dimensions in decision-making will be a first for Western Australia and one of only very few undertaken internationally.

The government will determine arrangements for sustainability assessment of state significant projects in its response to the Keating Review.

Complex planning decisions

The Department for Planning and Infrastructure and other government agencies are currently using techniques like citizens' juries and multi-criteria analysis with community-based weighting of sustainability criteria to decide on preferred planning options. The Sustainability Code of Practice (see section on *Embracing sustainability in government agencies*) will outline how agencies can use multi-criteria analysis and similar tools as a basis for incorporating sustainability into decision-making.

Programs, policies and agreements

Government has made an election commitment to ensure that agencies incorporate sustainability principles into their activities and many agencies have been building sustainability into policies and programs. The Department of the Premier and Cabinet will continue to provide advice to government agencies on how to use sustainability as the basis for developing and reviewing programs, policies and agreements. The Sustainability Code of Practice will include guidelines for government agencies on policy development and sustainability assessment of policies, programs and agreements.

Cabinet submissions

The Policy Division, Department of the Premier and Cabinet, currently provides advice to the Premier on sustainability and other policy implications of Cabinet submissions. The Policy Division will use the sustainability assessment framework as the basis for providing advice on Cabinet submissions. The Sustainability Code of Practice will include guidelines for applying the sustainability framework to Cabinet submissions. Government will also modify the Cabinet Handbook to incorporate the requirement to address sustainability issues.

Corporate plans

Government agencies have highlighted the need for guidance on how sustainability considerations can be integrated into their decision-making processes, including criteria and guidelines to ensure their practices are consistent with sustainability objectives. The Sustainability Code of Practice will include guidelines for applying the sustainability framework to corporate plans and the Policy Division will continue to provide advice to agencies on their corporate plans.

Legislation

There has been a trend for new legislation to incorporate sustainability principles, however there is a need for a consistent and comprehensive approach in the future. The government will consider existing legislation when it is reviewed to identify where there are opportunities to incorporate sustainability principles and practices and include guidelines in the Parliamentary Cousel's Guidelines and Procedures for the drafting of legislation to ensure that sustainability is addressed in future legislation.

Long term arrangements

There is a need for commitment to the long-term evolution and development of the assessment process, to build capacity within agencies, to reform institutional and legislative arrangements and to establish new procedures, criteria and guidelines. This will need to be an incremental and organic process where government, industry and community continuously learn from experience and progressively adapt the sustainability assessment process accordingly.

It would appear that current institutional and legislative arrangements allow government to undertake triple bottom line assessments where environmental, social and economic effects are separately identified. However, it is very difficult to undertake truly integrated sustainability assessments from initiation to approval in assessing projects, plans, policies or programs. Long-term arrangements are therefore likely to require institutional changes as experience is gained in sustainability assessment.

In addition to institutional arrangements, the ability to set social and economic conditions for project approvals as well as environmental conditions needs to be established to make sustainability assessment of projects function as an integrated process. This may require legislative change in the medium term.

In short...

Vision

Sustainability assessment forms the basis of all significant government decisions and is embedded into all levels of government activity.

Objective

Enable net benefit outcomes to be achieved from an assessment process that is consistent with sustainability principles.

Actions underway include

- Triple bottom line assessments are being established for significant projects and complex planning decisions.
- *The Review Of The Project Development and Approvals System (Keating Review)* has been submitted to government after public comment.

Proposed actions

1.1 Establish transitionary arrangements for sustainability assessment including the establishment of a Social Assessment Unit in the Department for Planning and Infrastructure and an Economic Assessment Unit in the Department of Treasury and Finance. Capacity to address sustainability will also need to be developed within all relevant agencies.

1.2 Establish an Industry-Government Working Group on Sustainability Assessment to further develop processes and practices.

Indicators and targets

- Capacity within government, the private sector and the community to participate in sustainability assessment.

Global opportunities

The process for sustainability assessment is likely to produce better all round outcomes for government, industry and the community. Considerable discussion is occurring globally on the need for sustainability assessment though no government appears to have a comprehensive process in place. If Western Australia can develop this process and establish capacity to ensure it is done well, then this service could contribute to a significant global market.

Further information

Buselich, K 2002, *An outline of current thinking on Sustainability Assessment*, sustainability background paper, Draft State Sustainability Strategy CD-ROM, Department of the Premier and Cabinet, Perth

Gibson, R 2001 *Specification of Sustainability-Based Environmental Assessment Decision Criteria and Implications for Determining 'Significance' in Environmental Assessment*, Canadian Environmental Assessment Agency Research and Development Programme, viewed August 2002, <http://www.sustreport.org/downloads/Sustainability,EA.doc>.

Independent Review Committee 2002, *Review of the Project Development Approvals System: final report*, Government of Western Australia, Perth, viewed August 2002, <http://www.premier.wa.gov.au/Feature_stories/ProjectApprovalsFinalReport.pdf>

> ## INSTITUTIONAL CHANGE

Sustainability involves most government agencies and Ministers; each has responsibilities primarily in social, environmental or economic dimensions.

[
The sustainability agenda can provide a very useful framework for the State Government in achieving a more coherent whole-of-government agenda. It provides a wide range of principles by which government decision-making can be considered, and a powerful vision that can appeal to the broad community. It also provides an integrative framework that addresses all the key goals for our society and its governance, while also providing important guidance for setting priorities.
]

Environmental Alliance

[
In our view, a key role of the Sustainability Policy Unit should be to provide guidance to Government agencies on how sustainability considerations can be integrated into their decision-making. This would complement the Unit's work on awareness raising and promoting best-practice. Such guidance would assist those agencies in their work with industry.
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Chamber of Minerals and Energy

This section describes the proposed institutional arrangements for sustainability.

Each government portfolio has different responsibilities for implementing aspects of the triple bottom line of sustainability–environmental, social and economic. The challenge for government will be to support the integrated thinking across agencies that sustainability demands. Rather than operating within 'silos' to progress only the environmental, social or economic dimensions, government agencies need to work in a way that progresses all three elements concurrently.

In recognition of the need for coordinated planning and decision-making the government established Cabinet Standing Committees for Economic, Environmental, Regional and Social Policy in 2001, which has enabled 'joined-up' consideration and development of government policy in these broad areas.

The Machinery of Government reforms have also resulted in fewer departments and the consolidation of responsibilities and functions to minimise overlap and duplication. This has benefited sustainability thinking by integrating responsibilities that were previously separate, for example the transport portfolio is now part of the Department for Planning and Infrastructure. This provides the mechanism for better integrating transport planning with planning for sustainable urban form. Similarly, water resources management and environmental protection are now the responsibility of the Department of Environment, Water and Catchment Protection.

No single minister or agency is currently able to provide the integrating mechanisms across government that are required for sustainability. However, the Sustainability Policy Unit within the Department of the Premier and Cabinet can undertake many functions to improve integration including:

- supporting sustainability assessment

- assisting with capacity building in sustainability assessment

- advising agencies on how to operationalise sustainability in their own activities through developing a Sustainability Code of Practice and a Sustainability Resource Guide (see *Embracing sustainability in government agencies*)

- coordinating across-government activity in sustainability reporting

- providing sustainability policy advice including oversighting the implementation of the State Sustainability Strategy as well as the incorporation of sustainability principles into legislation, the approvals process and the planning process

- providing community advice and programs on sustainability including the State Sustainability Strategy process.

As outlined earlier in *Sustainability assessment*, Sustainability Assessment Units are proposed in the Department for Planning and Infrastructure, Department of Treasury and Finance and the Environmental Protection Authority. Staff within these assessment units will require training for the implementation of sustainability assessment. The Department for Planning and Infrastructure will also play an important role in the implementation of the State Sustainability Strategy through the establishment of statutory processes with local government and Regional Councils (see *Partnerships for action*).

Other agencies also need to ensure sustainability capacity within their policy functions. This will have the advantage of enabling a network of skilled staff across government to achieve a 'whole-of-government' perspective on sustainability. The Sustainability Policy Unit will support regular communication and information exchange across this network to support capacity building for sustainability across the public sector.

In short...

Vision

Institutions for sustainability are established and functioning as an essential and integral part of how government functions.

Objectives

- To enable robust institutional arrangements within and across the state government to ensure sustainability is embedded into government activities.
- To enable adaptability and progressive learning on how institutional arrangements can most effectively enable sustainability to be realised.

Actions underway include

- The Sustainability Policy Unit is established within the Policy Division of the Department of the Premier and Cabinet.
- The Department for Planning and Infrastructure has been conducting a sustainability assessment of the freight network and the Southern Rail City entrance options.
- The Department of Housing and Works has a policy group with sustainability expertise.
- The Department of Fisheries has an ecologically sustainable development reference group.
- The Department of Conservation and Land Management and other departments have had commitments to sustainability within its corporate plan for some years.
- The Machinery of Government Taskforce has restructured government agencies to achieve more integrated, whole of government outcomes.

Proposed actions

1.3 Require the Sustainability Policy Unit to:
- support sustainability assessment
- assist agencies in implementing the State Sustainability Strategy within their own areas of responsibility
- coordinate sustainability reporting across government
- provide general policy advice on sustainability and monitor implementation of the State Sustainability Strategy
- support regular communication and information exchange for capacity building in sustainability across the public sector
- provide community education programs on sustainability including the State Sustainability Strategy process.

In short cont'd...

1.4 Assist relevant agencies to incorporate sustainability capacity into their policy functions, enabling a network across government to achieve a 'whole-of-government' perspective on sustainability.

Indicators and targets

- Number of agencies with sustainability policy functions.
- Number of public servants with sustainability expertise and experience.

Global opportunities

The establishment of sustainability in a proper institutional framework and the experience generated will become a major, globally innovative process. The potential to use this in capacity building within developing countries could be greater than the processes which have been developed over the past 20 years in environmental protection.

Further information

The Machinery of Government Taskforce 2001, *Government Structures for Better Results: The Report of the Taskforce Established to Review the Machinery of Western Australia's Government*, Ministry of the Premier and Cabinet, Perth.

> EMBRACING SUSTAINABILITY IN GOVERNMENT AGENCIES

Government needs to lead by example on workplace sustainability and a range of agency sustainability innovations will be implemented.

Government agencies should at least minimise their own ecological footprint, by adopting eco-efficient office operations, critically reviewing transport and travel and inclusion of environment and sustainability criteria in government purchasing and contracting. "The government cannot urge sustainability on the rest of the community without putting its own house in order. Leadership must be provided in the first instance by the Premier, Geoff Gallop, and by the relevant Ministers in the departments and agencies under their control.

Environmental Alliance

The Department has also sought to move towards sustainability it in operations. It has for many years established renewable energy systems in isolated locations wherever practicable, and has more recently committed to purchasing a portion of its electricity from renewable sources. Paper, plastic and metal recycling programs are active in most Departmental locations. These activities will be coordinated and enhanced through a "Cleaner Production Plan" which is currently in development.

Department of Conservation and Land Management

Perth Zoo has a vision for becoming the World's first "Sustainable Zoo", consolidating Perth Zoo as a world leader and providing the Western Australian public with a leading cultural institution, that educates, entertains and undertakes vital conservation work and breeding programs. Perth Zoo plans to achieve a vision for a sustainable approach to its own management and development using environmental management systems, water recycling, waste re-use, conservation and community education and maintaining a focus on sustainable eco-systems within Zoo enclosures.

Perth Zoo

Part of the government's leadership role is to ensure that its agencies embrace and pursue sustainability principles, supporting a transition to a more sustainable future through its considerable influence in setting policies, making decisions, purchasing and procurement and managing its own activities to positively support sustainability. This sends clear signals to the community and businesses that the government is 'walking its own talk' and 'putting its house in order'.

Many jurisdictions around the world have responded to the sustainability imperative through initiatives that support the 'greening of government'. Government agencies in Western Australia have made some progress in workplace sustainability. Some agencies have already begun a comprehensive response to this issue through the adoption of an Eco-Office Program or through becoming signatories to the Western Australian Sustainable Industries Group's Cleaner Production Statement. Box 8 describes the Perth Zoo's efforts to become the world's first sustainable zoo.

The implementation of sustainability across the public sector requires a holistic and well-planned approach to ensure that this is undertaken comprehensively. In its Environment Policy, the government committed to developing a Code of Conduct for policy-making and management practices that would enable sustainability principles and practices to be incorporated into all aspects of government decision-making.

A Sustainability Code of Practice for Government Agencies will summarise Government's requirements for its agencies in addressing sustainability, as outlined in this section, including:

- applying sustainability principles in the discharge of agency functions

- ensuring agencies' day-to-day activities are sustainable

- supporting sustainability assessment of legislation, policies, agreements, Cabinet submissions and projects

- monitoring and reporting on agency achievements and commitments to sustainability.

BOX 8   PERTH ZOO: THE WORLD'S FIRST SUSTAINABLE ZOO

It is Perth Zoo's vision to become the world's first sustainable zoo. It is setting an example for other recreation and tourism venues by developing management strategies that integrate environmental, economic and social sustainability and demonstrate possibilities for the future. Being the most popular tourist and family destination in the state, with approximately 550,000 visitors annually, the Perth Zoo aims to use its success and popularity to increase support for world conservation, sound environmental practices, community education and sustainable business practices.

The Zoo is developing a sustainability management plan in conjunction with Curtin University's Centre for Cleaner Production. The sustainability plan for the zoo recognises the importance of research, continual improvement and the establishment of long-term business and sponsorship relationships. These relationships involve organisations that similarly demonstrate an ongoing commitment to the environment and conservation ethos.

Perth Zoo is limited by space and funding. Therefore its sustainability strategy must embrace these challenges as opportunities to increase the economic and ecological efficiency of its operations. Strategies have so far involved: an Environmental Management System; energy and water conservation; alternative energy sources and solar design; onsite chipping and composting; the use of recycled paper in offices and shredded paper for animal bedding; the introduction of public recycling stations; the encouragement of electronic communication when possible; and an Environmental Management Committee chaired by the CEO. The Perth Zoo has found that implementing these strategies not only provides social and environmental benefits they are also economically efficient.

In leading by example the morale of the zoo staff is increased and its role in education is enriched. The Zoo has a role to inform the public about global biodiversity protection and research on endangered species and their habitats. The impact of this on local families, school groups and tourists is increased when it is clear that the zoo is 'walking the talk' on global sustainability issues in general. The Zoo's Homestead exhibit provides an environmental showcase for the public. Information is provided on recycling, waste reduction and reuse, permaculture, alternative energy sources and solar passive design principles. The Zoo believes this is an effective way of communicating actions that individual householders can take to minimise their impact on the environment.

The implementation of a sustainability management plan focusing on community education and conservation has given the Perth Zoo great potential as a community and industry leader in sound environmental management and business sustainability.

Source: Amber Hadley and Elyse Casserly

Agencies will develop a *Sustainability Action Plan* to respond to the Sustainability Code of Practice and comprehensively address how sustainability will be pursued. This will ensure the operationalisation of sustainability within agencies beyond the State Sustainability Strategy. It will also allow flexibility and an evolutionary approach by enabling agencies to determine what sustainability means for them in the context of their statutory responsibilities, operating environments and customers. At the same time, it will also enable a consistency of approach for important government wide-actions such as procurement policy and energy efficiency. Box 9 summarises the possible main elements of a sustainability action plan. Agencies will also report on the implementation of the sustainability action plan in their Annual Reports.

The Sustainability Policy Unit will prepare guidelines in consultation with agencies to assist the development of sustainability action plans. The unit will also review draft plans.

BOX 9   GOVERNMENT AGENCY'S SUSTAINABILITY ACTION PLANS

Sustainability Action Plans will be developed in consultation with key stakeholders and:

- address issues outlined within the State Sustainability Strategy of relevance to the agency

- identify any agreed actions for which they are primarily responsible arising from the State Sustainability Strategy

- describe how the agency will shift to more sustainable day-to-day management of their operations, including the adoption of existing government-wide programs and policies for procurement as well as targets for energy use, water use, waste reduction and recycling, vehicle use, travel reduction and other relevant targets

- set out a community engagement plan

- set out proposals for action and improvement over a three year period (2003 - 2006)

- be incorporated into strategic and business plans as these plans are reviewed and or prepared

- define the measures that agencies will use to report on progress towards sustainability.

Applying sustainability principles

Agencies will review and amend their existing strategic and operational plans to:

- incorporate sustainability principles

- reflect any commitments they are responsible for under the State Sustainability Strategy

- adopt additional measures that are available to implement sustainability principles in agency operations.

Additional measures to implement sustainability principles will vary between agencies. For example:

- an agency responsible for making decisions concerning the use of natural resources should specify how sustainability principles will be applied in making those decisions

- an agency that plans for transport infrastructure should specify that the full costs, including infrastructure, environmental and safety costs, should be taken into account in developing those plans (see Table 3, the Department for Planning and Infrastructure's proposed criteria for assessment of projects)

- an agency that assists particular industries should set out strategies for using that assistance to promote sustainability in that industry.

Ensuring agencies' day-to-day activities are sustainable

Government agencies are significant resource consumers in their own right and will be required to embed sustainability into their day-to-day activities including through purchasing and procurement.

The Western Australian Government spends around $5 billion on goods and services, construction and building related services. This is a significant contribution to Western Australia's economy. Clearly, government purchasing and procurement can be a powerful driver to support more sustainable behaviour as well as the emergence and establishment of sustainable behaviours in businesses and industries that supply goods and services to government. As the submission from the State Development Portfolio notes, 'Government procurement has an important role in contributing to sustainability through efficient and effective government purchasing based on whole-of-life cost considerations and by aligning purchasing strategies with the adoption of sustainable technologies and solutions.'

The Premier has established an Interdepartmental Committee on Sustainability Procurement to prepare a comprehensive approach to sustainability procurement in government. This new approach will be included in the final version of the State Sustainability Strategy.

In its Environment Policy the government committed to introducing annual environmental performance reporting requirements for all government agencies in areas such as energy consumption, waste disposal, vehicle fuel efficiency and recycling; as well as requiring departments and agencies to set targets for waste reduction and recycling. These were to be audited according to the principles of sustainability and included in Annual Reports.

Through the Sustainablity Action Plan agencies will be required to put in place programs and resourcing consistent with this election commitment and respond to government-wide targets and initiatives including for the following areas:

- sustainability procurement

- waste reduction and recycling

- energy use

- water use

- reduced travel and vehicle use and vehicle fuel efficiency.

Existing government initiatives, requirements and targets in each of these areas are summarised in Box 10.

Assistance for agencies is available in some areas, for example through the Sustainable Energy Development Office's Energy Smart Government Program that provides funding for agencies to invest in energy saving activities. A new common-use contract has also been established to provide a panel of consultants who can conduct waste audits for agencies.

The Sustainability Policy Unit will develop detailed guidance for agencies in how to develop a Sustainability Action Plan through preparing a Sustainability Resource Guide for Government Agencies, in consultation with relevant agencies.

BOX 10 GOVERNMENT WIDE PROGRAMS AND COMMITMENTS FOR SUSTAINABILITY

Waste reduction and recycling
The government requires its agencies to meet the Waste 2020 target of towards zero waste by 2020. The Waste Management Board will develop specific waste reduction and recycling targets for government agencies.

Energy use
As part of the Energy Smart Government Program, the government requires agencies to achieve 5%, 6%, 7%, 8% and 12% energy savings per year for the years 2002-3 to 2006-7. Building on the present Financing Energy Efficiency Program, the new Energy Smart Government Program supported by the Sustainable Energy Development Office will enable agency offices to be audited and refitted for energy conservation.

The government will undertake to purchase renewable energy for an increasing proportion of electricity requirements in the most cost effective manner.

Building design
The development of government building and landscaping will incorporate the principles of solar orientation, energy efficiency, waste recycling, water use efficiency, accessible design and other sustainability innovations.

Water use
Government properties will demonstrate best practice in water use efficiency through water wise gardens, bores, rainwater tanks, grey water recycling and water efficient appliances (see *Sustainability and settlements: Our water future*).

Vehicle packages, fuels, reduced travel and vehicle use
The number of cars in the government vehicle fleet will continue to be reviewed to ensure these remain at the optimum level and are reduced where possible and options will be available for senior public servants to include provisions for taking public transport in lieu of vehicles.

Agencies will incorporate individualised travel management programs.

The vehicle fleet and electric train system will be carbon neutral by tendering for the best option to purchase greenhouse credits.

The LPG conversion program of 25% of eligible replacement six cylinder vehicle (both passenger and utilities) will continue into 2002 and 2003.

Gas, hydrogen and biodiesel will be actively used in buses to demonstrate the applicability of these fuels for heavy vehicles.

Government centres will develop Internet conferencing facilities to ensure that meeting travel is minimised.

Public engagement
The government will ensure transparent, participatory and engaging public processes are embedded in agency activity.

Social responsibility
The government will require agencies to examine strategies for community-building and social responsibility involving their own employees.

Supporting sustainability assessment of legislation, policies, agreements, cabinet submissions and projects

Relevant government agencies will support sustainability assessment as described in the section on *Sustainability assessment*.

Public engagement

Public consultation and engagement is an important principle of sustainability and agencies are expected to undertake this as part of their core business. Each agency could utilise the *Consulting Citizens Resource Guide* developed by the Citizens and Civics Unit, Department of the Premier and Cabinet, to facilitate public engagement.

The process of engagement will also be assisted by the historic development of the WA Collaboration, a grouping of civic society in Western Australia, involving conservation groups, unions, social services, churches, youth, seniors and other interests. The Lotteries Commission provided funding to the WA Collaboration to help implement the State Sustainability Strategy.

Monitoring and reporting on agency achievements and commitments to sustainability

An increasing number of businesses and government agencies around the world are preparing triple bottom line reports and working to determine how best to report their social, economic and environmental activities. Within Western Australia, the Water Corporation, WMC and BP Australia Ltd have all recently prepared a triple bottom line or sustainability report.

The State Strategic Plan will inform the structure of future budgets and include environmental, social and economic goals for government. The Department of Treasury and Finance is investigating triple bottom line reporting at a whole of government level.

Triple bottom line reporting in government agencies will be trialed with selected agencies. These agencies will prepare their annual reports against a triple bottom line framework and include additional information in terms of the social and environmental aspects of their operation. The success of this will be reviewed with a view to making this a government-wide requirement in years to come. Agencies could also choose to prepare a separate triple bottom line report as the Water Corporation has already done.

The government will also report publicly on the implementation of the State Sustainability Strategy.

In short...

Vision

Western Australian government agencies are recognised nationally and internationally for their sustainability innovations.

Objective

Ensure government agencies are leading by example in pursuing sustainability through adopting sustainability in their planning, decision-making, everyday activities and reporting.

Actions underway include

- Some agencies have adopted a dedicated Eco-Office Program, developed an Environmental Management Plan or are signatories to the Western Australian Sustainable Industries Group Cleaner Production Statement in order to minimise the environmental impact of their activities.
- The Sustainable Energy Development Office provides the Energy Smart Government Program to support the adoption of energy efficient activities within government agencies.
- The State Supply Commission's *Supporting other Government Directions Policy* encourages agencies to purchase recycled and recyclable goods.
- The Perth Zoo has adopted a comprehensive environmental management program and aims to be the first sustainable zoo of the 21st Century.
- The Premier has established an Interdepartmental Committee for Sustainable Procurement to develop a comprehensive policy on this issue.
- The Department of Fisheries is developing a process to assess all Western Australian fisheries in terms of ecologically sustainable development and to report to Environment Australia and the Western Australian community.

In short cont'd...

Proposed actions

1.5 Incorporate sustainability principles and practices into the legislation administered by relevant government agencies as it comes up for review or drafting.

1.6 Develop a Sustainability Code of Practice in consultation with government agencies to provide direction and guidance for how government agencies should plan for, manage, report on and operationalise sustainability. The Sustainability Code of Practice will require agencies to create Sustainability Action Plans in order to put these programs into practice. A Sustainability Resource Guide will be developed to assist agencies in this process.

1.7 The Sustainability Code of Practice and Action Plan will incorporate a number of initiatives across government including requirements for:

- sustainability assessment
- agency policies and decision making to incorporate sustainability
- procurement policy
- the Energy Smart Government Program
- reducing vehicle use through individualised travel management processes
- improving vehicle fuel efficiency and demonstrating the use of gas, hydrogen and biodiesel bus demonstrations
- investigate how the government vehicle fleet and the electric train system can reduce greenhouse gases by purchasing equivalent carbon credits from Western Australian carbon sequestration projects
- working towards achieving zero waste by 2020 and increasing recycling
- reducing water use as outlined in the draft State Water Conservation Strategy
- demonstrating sustainability innovation in building design and construction
- purchasing renewable energy for an increasing proportion of electricity requirements in the most cost effective manner
- ensuring transparent, participatory and engaging public processes are embedded in all aspects of agency activity.

Indicators and targets

- Number of government agencies that have developed and are implementing a comprehensive Sustainability Action Plan.
- Percentage of government spending supporting sustainable industries.
- Number of government agencies preparing triple bottom line reports or reporting on sustainability actions through their Annual Reports.
- Number of Acts modified to incorporate sustainability principles and practices.

Global opportunities

Achieving sustainability in government is one of the key challenges in the global sustainability agenda. For example, there are large World Bank projects on these issues. Agencies and consultants developing this expertise will be able to participate in this market.

Further information

L Aitken, *Towards a sustainable procurement strategy*, sustainability background paper, Draft State Sustainability Strategy CD-ROM, Department of the Premier and Cabinet, Perth

S Waller, *'Walking the walk': workplace sustainability policy, program and actions within the state government of Western Australia*, sustainability background paper, Draft State Sustainability Strategy CD-ROM, Department of the Premier and Cabinet, Perth

> PARTNERSHIPS FOR ACTION

Implementation of sustainability will require partnerships with a range of key stakeholders. Local government in particular will be a key partner for implementing sustainability.

> *Individual governments, just like individual companies and individual people, cannot deliver sustainability on their own–global approaches are required as well as local approaches, and partnership is essential.*
>
> BP Australia Ltd

Local governments around the world and in Australia have taken sustainability seriously for a long time. Chapter 28 of Agenda 21 considered the role of local authorities in supporting sustainability. This initiative has become known as Local Agenda 21 and has provided the framework and driver for much action by local government around the world.

The Western Australian Local Government Association indicates that some 6,416 local authorities in 113 countries have either made a formal commitment to Local Agenda 21 or are actively undertaking the process. At the end of 2000, over 70 Councils in Australia were either starting or had developed a Local Agenda 21 program. To date, 15 Western Australian Local Governments have formally committed to a Local Agenda 21 process including the Cities of Fremantle, Armadale, Mandurah, Nedlands, Subiaco, Stirling, Joondalup and Cockburn, the Shire of Serpentine-Jarrahdale and the Town of Cottesloe.

The Western Australian Local Government Association provided a detailed submission setting out how local government needs to be involved in every aspect of the State Sustainability Strategy. The association proposed:

> ... that a Sustainability Partnership [be] formalised (under the umbrella of the more general State-Local Partnership) at the time the Strategy is finalised; and in the meantime a Roundtable is established as an embryonic Advisory Council to progress the Strategy formulation.

Given the complexity of the issues involved and the Western Australian Government's intention to work more closely with local government on a range of issues, it is desirable that opportunities to jointly pursue sustainability be considered comprehensively by state and local governments working together.

Therefore, during the process of public consultation on the draft State Sustainability Strategy, the government will establish a roundtable with the Western Australian Local Government Association (representing local government). This effort will be directed towards creating a State-Local Government Common Sustainability Framework consisting of common principles, goals, approaches, and programs building on the sustainability framework outlined in this strategy (see Figure 2). This partnership on sustainability policy and implementation between the state government and local government is probably unique in Australia.

The framework will address institutional accountability, alignment of state and local government policy directions and processes on sustainability, regional groupings of local government for responsibilities in different areas (see below), and common state-local government methodologies and resources. The partnership agreement should build on the draft State Sustainability Strategy and be completed in time for finalisation with the final State Sustainability Strategy.

Local governments have expressed the view that some large regional projects do not adequately address local social and economic considerations. The roundtable can suggest ways forward, including through partnerships with industry, state and local government to consider these matters for new and on-going projects.

A key process will be how to use the Town Planning and Development Act to enable sustainability principles and processes to be incorporated into statutory processes at the local level. This will include exploring how Regional Councils could be created to address sustainability issues and the use of various statutory

powers by agencies and local governments directly for sustainability outcomes for natural resource management, settlement and community issues.

Regional Councils can be established with the powers of a local government under the Local Government Act. These were originally set up to manage waste as it was obvious that each local authority (especially in the city) could not have their own landfill site nor could they have the ability to establish a recycling centre in each locality. Regional partnerships were required.

The same issue now confronts local government on many of the sustainability issues outlined in this report: natural resource management issues (especially landcare, drainage and coastal issues), settlement issues (especially transport, growth management, air quality, waste, renewable energy location and heritage) and community issues (especially on location of community services, social housing, health and education). There is a real need for local government to establish regional partnerships with the state government on these issues while at the same time maintaining their local identities and close links so vital to the implementation of any policy. This will be achieved in incremental steps to ensure regional capacity building and ownership is in place. Many issues will also be managed by agencies or by local government directly.

There are already two good models of Regional Councils (both of which made substantial submissions to the State Sustainability Strategy): the Eastern Metropolitan Region of Councils (representing six Councils in the east of Perth); and the North East Wheatbelt Regional Council (NEWROC, which represents seven councils in the Wheatbelt). Both Regional Councils have been able to develop staff and capacity to make significant contributions on policies for sustainability. Neither has yet used their statutory powers for other than waste management. The process for implementation of the State Sustainability Strategy through this roundtable and partnership agreement is set out in Figure 2.

The roundtable has primary representation from various state government agencies (different for each issue) and the WA Local Government Association. It also includes the WA Collaboration (a combination of civil society groups including conservation, churches, unions, social services representatives), industry, (for example the Western Australian Sustainable Industries Group, the Chambers of Commerce and Industry and Minerals and Energy), and research organisations (CSIRO and the Global Sustainability Centre). Its major outputs will be a Common Sustainability Framework and a set of recommended implementing processes including Regional Councils and other policy instruments and processes. The roundtable can develop clear agendas for implementing the State Sustainability Strategy for the priority areas outlined in the draft Strategy.

The draft Strategy also proposes additional partnerships involving civil society, research organisations and industry to undertake further work in key areas important to the different sectors. These partnerships will be described in more detail in other parts of the draft Strategy. Proposed additional partnerships include:

- *Regional sustainability* (particularly universities)
- *Research and development for sustainability* (industry, universities and CSIRO)
- *Sustainability assessment* (industry)
- *Sustainable mining and petroleum production* (industry)
- *Corporate social responsibility* (with industry)
- *Eco-efficiency and industrial ecology* (with industry).

Each of these partnerships will be an inclusive process to try and achieve creative and innovative solutions through dialogue and involve representation from the WA Collaboration.

Figure 2   The State-Local Government Roundtable process to develop a common sustainability framework and processes (such as Regional Councils) to implement the State Sustainability Strategy
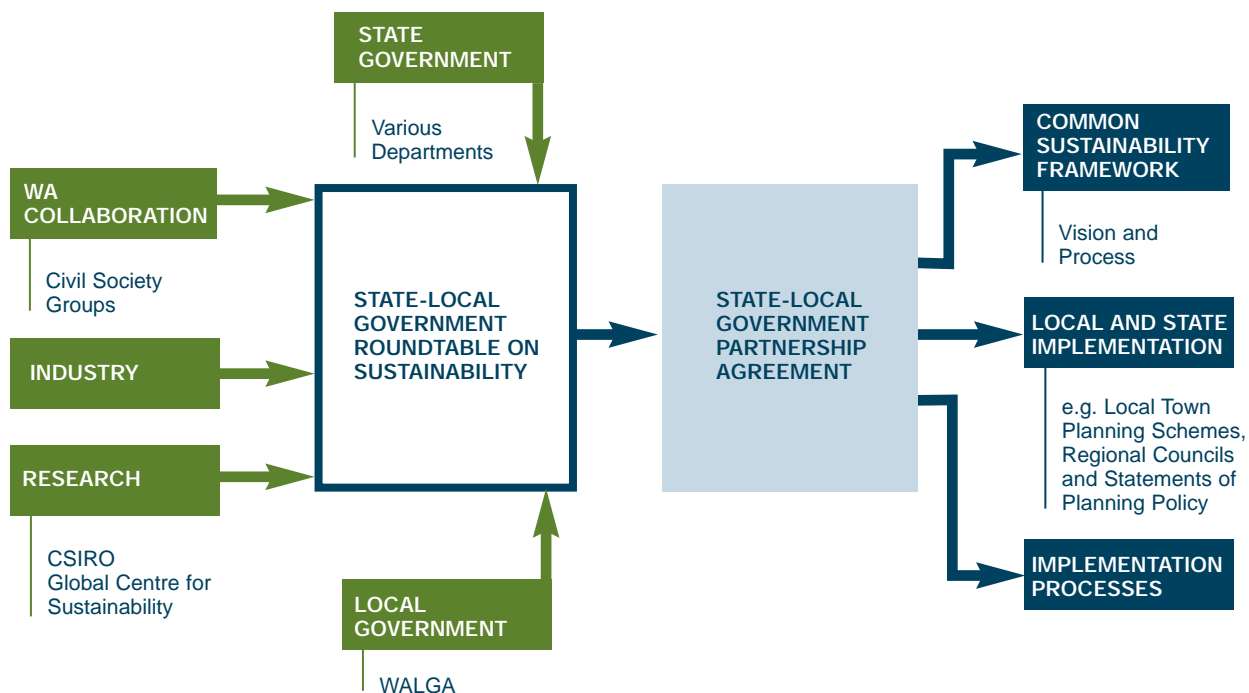
In short...

Vision

State and local governments are acting in unison to realise a sustainable future for the Western Australian community. Other partnerships with universities and industry are able to creatively resolve sustainability issues.

Objectives

- Establish partnerships involving civil society, industry, local government and research organisations to progress, finalise and implement the State Sustainability Strategy.

- Achieve integrated state-local government approaches to sustainability and align state and local government policy and processes with sustainability principles.

Actions already underway

- Fifteen Western Australian local governments have formally committed to a Local Agenda 21 process including the Cities of Fremantle, Armadale, Mandurah, Nedlands, Subiaco, Stirling, Joondalup and Cockburn, the Shire of Serpentine-Jarrahdale and the Town of Cottesloe.

- Some 67% of Western Australia's population live in a local government area involved with the Cities for Climate Protection program.

- Some partnerships with government for sustainability already occur, for example the WA Sustainable Industries Group.

Proposed actions

1.8   Establish a partnership with local government (represented by the Western Australian Local Government Association) to create a State-Local Government Common Sustainability Framework consisting of common principles, goals, approaches, and programs. It will build on the sustainability framework outlined in this strategy. This framework will be formally set out in a partnership agreement.

In short cont'd...

1.9 Support a State-Local Government Sustainability Roundtable to create the partnership agreement and its implications for local government sustainability. The Roundtable will explore the role of regional councils (groups of local government) in supporting sustainability, the implementation by individual local government and the role of state government in enabling local governments to fulfill these roles. Involve the WA Collaboration in the roundtable as well as industry and research interests.

1.10 Work with the WA Collaboration and industry stakeholders to implement the State Sustainability Strategy through similar partnership processes.

1.11 As part of the State-Local Government Roundtable examine the issue of how assessment can create a better process for involving local government in large development projects.

Indicators and targets

- Number of regional councils and local governments working on sustainability issues.

- Level of engagement by key stakeholders in implementing the State Sustainability Strategy.

Global opportunities

Agencies, local governments, industry and civil society can participate in the growing international market for sharing the insights and innovations from places like Western Australia that develop unique partnerships for sustainability.

Further information

G Alderson and S Turner, *Moving Towards Sustainability in the City of Gosnells: A Case Study of Local Government Addressing the Sustainability Agenda*, 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/gosnells/gosnells.htm>

C Leigh, *Local Government and Sustainability: How the Western Australian Local Government Association is assisting local councils to adapt to the new agenda of sustainability*, 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/WALGA/walga.htm>

X Menage, *Working Towards Sustainability: Local Government Greenhouse Action through the Cities for Climate Protection Campaign*, 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/Greenhouse%20Action/greenhouseaction.htm>

P Zele, *Local Agenda 21 Applied Locally in Western Australia: The City of Cockburn Case Study February*, 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/la21/localagenda21.htm>

> PLANNING FOR SUSTAINABILITY

Sustainability presents a new emphasis in traditional planning practice. The statutory planning tools to prepare, implement and review policies and plans offer a powerful mechanism to apply the principles of sustainability.

Western Australia is fortunate in that it has an established planning system administered by agencies and institutions with considerable experience in dealing with a range of development issues and community views. It provides significant opportunity through strategies, policies, regulation and special projects to influence the direction and type of growth and development throughout the State and demonstrate commitment to sustainability principles.

Royal Australian Planning Institute

The EMRC provides a successful model of a partnership by its member Councils to enable a strategic long-term focus that is both environmentally and culturally sensitive to the Region. The Regional Environmental Strategy 2000 (RES) is a major strategic initiative undertaken by the EMRC to protect and manage the Region's natural environment and resources. The RES also identifies issues and defines future actions aimed at achieving sustainability and to value and preserve the environmental, social and economic aspects that make the Region unique.

Eastern Metropolitan Regional Council

The core process in sustainability consists of:

- finding a strategic vision of the future which is the desired outcome for a majority of the community based on common good principles

- setting out practical steps that integrate economic, social and environmental outcomes relevant to that vision and which can be taken through every element of development

- embedding this through statutory processes and procedures where appropriate to make a significant contribution to the implementation of the State Sustainability Strategy.

This is also the process that has traditionally been called 'town and country planning'. The town planning profession arose out of health and transport problems at the turn of the 19th century and has provided an orderly statutory process of achieving social, environmental and economic goals for over a hundred years, in all parts of the world including Western Australia.

Local government is a major stakeholder in all levels of planning. Local Town Planning Schemes are an important mechanism for addressing sustainability issues in the statutory process as well as Metropolitan Region Schemes and Regional Plans. However the vision for tackling sustainability issues has mostly come from other processes. Local governments have been preparing Local Agenda 21 Plans and have participated in the international program Cities for Climate Protection. Natural resource management groups have had close links to local government, and much community development occurs through local government. Yet little of this is incorporated into the statutory planning process despite it having significant implications for land use (and transport) planning.

Another planning instrument created under the Town Planning and Development Act, the Statement of Planning Policy, has great potential to be used more widely to promote sustainability. In particular, it has the potential to be used as a whole-of-government document, developed in accordance with sustainability principles, to integrate land use and management requirements for specified areas of the state. Current Statements of Planning Policy are provided in environment and natural resources, sustainable settlements, economy and employment, transport and infrastructure, and regional planning. The classification system for existing and proposed Statements of Planning Policy is provided at Figure 3.

The state local government roundtable will identify opportunities through planning processes and procedures to implement the State Sustainability Strategy.

Figure 3 Classification System for Statements of Planning Policy

| Statements of Planning Policy
Sector Policies | Statements of Planning Policy
Supplementary Policies | Operational
Policies |

STATE PLANNING STRATEGY AND
STATEMENT OF PLANNING POLICY No. 1 STATE PLANNING FRAMEWORK

ENVIRONMENT AND NATURAL RESOURCES (SPP2)*

SPP2.1 Peel-Harvey Catchment
SPP2.2 Gnangara Mound Crown Land*
SPP2.3 Jandakot Groundwater Protection
SPP2.4 Basic Raw Materials
SPP2.5 Agriculture and Rural Land Use Planning
SPP2.6 State Coastal Planning*
SPP2.7 Public Drinking Water Sources*
and others............

SUSTAINABLE SETTLEMENTS AND COMMUNITY (SPP3)♦

SPP3.1 Residential Planning Codes*
SPP3.2 Planning for Aboriginal Communities
SPP3.3 Integration of Land Use and Transport♦
and others............

TRANSPORT AND INFRASTRUCTURE (SPP5)♦

SPP4.1 State Industrial Buffer*
SPP4.2 Metropolitan Centres
SPP4.3 Poultry Farms
and others............

ECONOMY AND EMPLOYMENT (SPP4)♦

SPP5.1 Land Use Planning in the Vicinity of Perth International Airport*
SPP5.2 Telecommunications Infrastructure*
and others............

REGIONAL PLANNING AND DEVELOPMENT (SPP6)♦

SPP6.1 Leeuwin-Naturaliste Ridge
SPP6.2 Future Perth*
and others............

OPERATIONAL POLICIES TO BE REVIEWED AS PART OF THE REVIEW OF LIVEABLE NEIGHBOURHOODS

* Statements of Planning Policy currently under preparation/review
♦ Proposed Statements of Planning Policy

NON-STATUTORY POLICIES
Regional Strategies
Structure Plans

Statements of Planning Policy (SPP) under s5AA of Town Planning and Development Act 1928

Source: Department for Planning and Infrastructure

The foundation of this process is the common sustainability framework and the process of establishing Regional Councils of local governments that are better able to focus on the sustainability issues confronting them. The capacity to address these issues is created through local government and state government processes to create the vision for the region in question, developing triple bottom line steps and then embedding this into a Statement of Planning Policy. The Statement of Planning Policy will be approved by the state government and guide the planning and actions of state agencies as well as the planning and actions of local government.

In short...

Vision

Planning provides the processes and procedures to create regional and local sustainability visions and triple bottom line actions to achieve these visions.

Objectives

- Better incorporate sustainability principles into statutory planning, especially integrated land use and transport planning.
- Identify opportunities through planning processes and procedures to implement the State Sustainability Strategy.
- More effectively involve local government in sustainability planning.

Actions underway include

- Longer-term planning processes, such as the State Planning Strategy, have incorporated triple bottom line approaches.
- Specific projects such as the Freight Network Review and the Perth City Rail Access Committee on the Southern Rail have used sustainability techniques.
- Some Regional Councils of Local Government have demonstrated regional sustainability planning.

Proposed actions

1.12 Work with local government, industry and community through the State-Local Government Roundtable to investigate the application of statutory planning and other processes in support of sustainability outcomes. Statements of Planning Policy can be developed and then be given legal effect through adoption by the Western Australian Planning Commission and state government. Once adopted, Statements of Planning Policy will guide the actions of Local Government and State Government agencies.

1.13 Support the increased involvement of local government in planning for natural resource management generally, including issues of agricultural sustainability, particularly regional drainage, biodiversity conservation, regional revegetation programs and water quality. As part of the State-Local Government Partnership Agreement explore opportunities for regional councils and local councils and statutory planning processes (such as Statements of Planning Policy and Environmental Protection Policies) to support natural resource management outcomes, including the possibility of adopting regional natural resource management strategies through Statements of Planning Policy.

1.14 Establish a Strategic Alliance for Sustainability within the Department for Planning and Infrastructure to assist in the implementation of new initiatives related to planning that are proposed in the State Sustainability Strategy.

1.15 Conduct a 'Planning for Sustainability Forum' in November 2002 to establish principles and processes for implementing sustainability across the planning and infrastrucure portfolio.

Indicators and targets

- Extent to which planning processes and procedures incorporate sustainability principles.

Global opportunities

Planning professionals from Western Australia are already in demand for global development projects in the Asia Pacific Region. Town planning is established worldwide but rarely has it been applied in its full capacity to solving sustainability issues. If Western Australia can demonstrate this then planning professionals and sustainability professionals involved will have many global opportunities to pass on their expertise and experience.

Further information

West Australian Planning Commission, <http://www.planning.wa.gov.au/>

> ## SUSTAINABILITY IN THE REGIONS

Sustainability means most when it is applied at a regional scale.

Regions need to be proactive in their creation of a sustainable future. This is a significant challenge for regions in decline. Demographic, service and employment issues that many regions are experiencing are intimately related to economic and ecological change. The ability of regional communities to care for their natural environments is dependent on economic and social wellbeing.

R Armstrong

There is clearly a need to develop sustainability strategies which target rural/regional/remote communities, and which acknowledge and address the very real differences between metropolitan and non-metropolitan communities and between various non-metropolitan communities. It is also clear that there is a need to engage communities in any sustainability initiatives."

Western Australian Council of Social Services

In order to achieve a transition to sustainability and permit strategic planning for sustainability, it will be important to have a clear understanding of the state of the social, economic and cultural environments in regional Western Australia. The WAM, with its knowledge resource - environmental, historical and cultural - and its museums in key regions (Albany, Geraldton and Kalgoorlie), is well placed to play a key role in this process....It is intended that MuseumLink will facilitate the engagement of regional communities with important societal issues such as sustainability, and thus empower them to better participate in the dialogue about their future.

WA Museum

The sheer size of Western Australia means that there is enormous variation in environments, economies and communities. At the regional scale, however, the natural environment becomes more defined and the regional variation in land, water and vegetation less distinct. Regions are a useful scale to plan for environmental and natural resource management as seen in the emergence of regional natural resource management groups and groupings of local authorities such as the North Eastern Wheatbelt Regional Organisation of Councils and the Eastern Metropolitan Regional Council.

Regions are linked to state, national and especially global economic factors but are also influenced by the predominant industry within that region (such as mining, agriculture or tourism). The formation of Regional Development Commissions recognised the need to capitalise on the different economic strengths and opportunities within the regions. Also local communities exist within and relate to a region–it is part of their identity. Many government services are delivered and administered regionally because it is a manageable scale.

For all these reasons, the State Sustainability Strategy encourages the pursuit of sustainability at the regional scale through the development of Regional Sustainability Strategies. These strategies will provide an opportunity to apply the broad framework of the State Sustainability Strategy working with groups of local government as outlined above. Many other government processes can also feed into the strategies, for example the Regional Natural Resource Management Strategies being prepared by Regional Natural Resource Management Groups. However, the Regional Sustainability Strategies have a rationale of their own–to tell regional 'stories'. The strategies can produce a regional 'sense of place' document to facilitate a shared understanding of the past, and a shared vision of sustainability for each region's future.

Regional strategies can provide the key to how future development should proceed; an issue explored by the Review of the Project Development Approvals System. The Regional Sustainability Strategies can define the issues that require further action and the resources that are available. They can describe the human dimension to a region through telling the 'story' of an area as suggested by City Vision:

The cultural and social dimensions of the state, the people, the place and how they have interrelated with each other and their natural environment

are the source of many rich stories. Some of the most skilled and powerful story-tellers the state has to offer are its artists, writers, composers, filmmakers, scientists and historians. The real challenge is to determine how the skills of these story-tellers and the rich repository of stories which exist, can contribute more overtly to the shaping of Perth's identity and to its longer term planning and development.

City Vision, 'Can Perth Be More Creative?', 2002.

This story telling approach can apply in regions of the city and in rural areas. The strategies will be prepared through community-based processes and involve universities, industry, local government and regional bodies.

The 'story' of each region will include Indigenous stories and history, natural history and local history. Partnerships to achieve these perspectives are already being established, for example, Professor Bolton's team at Murdoch University is developing an Indigenous history of Western Australia, the Department of Conservation and Land Management has regional conservation studies, the WA Museum is creating an approach to regional 'belonging' and local history and the Department of Planning and Infrastructure and Regional Development Commissions have various strategies and regional plans. Box 11 describes two other projects which add valuable insight to the development of regional sustainability strategies.

BOX 11   FLAGSHIP PROGRAMS FOR SUSTAINABILITY

Regional Sustainability will be given a boost in Western Australia by two major projects: CSIRO's Healthy Country Program and the World Wildlife Fund's Eco Region South West.

Healthy Country will address many of the regional sustainability research and development issues that are critical to the future for the State. This important initiative will be closely tied to the implementation of the State Sustainability Strategy and is further outlined in *Research and development for sustainability*. Eco Region South West is an international project by the World Wildlife Fund which has as its focus the management of the region's globally significant biodiversity. The project will be community-based to provide 'bottom-up' solutions to the many issues facing the region with an emphasis on policy and a biodiversity vision.

Both of these flagship projects support the implementation of the State Sustainability Strategy and help provide substance to a Regional Sustainability Strategy for the South West.

Regional Sustainability Strategies will:

- provide an integrated application of the State Sustainability Strategy as it applies to the region

- build on the regional natural resource management strategies currently in preparation

- incorporate the social element through sense of place 'stories' incorporating aboriginal stories, the natural history and the local history

- link to broad, non-government organisation processes in the regions to pursue regional visions, for example, Eco Region South West and CSIRO Health Country

- Incorporate Indigeneous regional sustainability strategies (see next section)

- provide a broad set of goals for the future from this process.

There are also important policy issues to be considered with local governments and Regional Development Commissions, for example on how best to determine boundaries for managing sustainability issues through Regional Councils of Local Governments. As part of the State-Local Government Partnership Agreement the government will provide encouragement and support for the establishment of Regional Councils of Local Governments particularly for sustainability issues including natural resource management, water supply and drainage, waste management, transport planning, economic and social planning.

The government will also investigate the potential role of Regional Development Commissions in supporting sustainability as part of the review of *Regional Development Commissions Act 1993*. The Regional Development Commissions will also be invited to support the development of Regional Sustainability Strategies and Regional Councils of Local Governments.

In short...

Vision

Each region has its 'story' that is constantly updated by the people who live there. This 'sense of place' resource enables all development project proponents to assess how they can contribute to the area as well as becoming a resource for tourism and education in the region.

Objectives

- Enable regional Western Australia to develop more sustainably.
- Apply the State Sustainability Strategy regionally.
- Develop a process that can enhance the long and short-term 'sense of place' in the regions of Western Australia.

Actions underway include

- The Department of Conservation and Land Management's biodiversity research and natural resource management studies, provide environmental perspective on regions.
- Regional natural resource management councils are preparing regional natural resource management plans.
- Regional development plans have economic, social and environmental components and Regional Development Commissions have elements of all three components in their activities.
- Regional cultural studies are beginning as part of cultural mapping for Indigenous perspectives.

Proposed actions

1.16   Develop Regional Sustainability Strategies. These strategies will provide an opportunity to apply the broad framework of the State Sustainability Strategy with Regional Councils and local government through Statements of Planning Policy and other statutory and non-statutory instruments, as described throughout the Strategy. These strategies will build on regional natural resource plans, regional development plans and Indigenous regional sustainability strategies. They will create regional 'sense of place' stories and future aspirations for regions. Regions will be defined across the state and within the city.

1.17   Take account of the role of Regional Development Commissions in supporting sustainability as part of the review of the *Regional Development Commissions Act 1993*. The Regional Development Commissions will also be invited to contribute to the development of Regional Sustainability Strategies.

1.18   Conduct Sustainable Business Investment tours to attract investment (including 'ethical' investment).

Indicators and Targets

- Number of Regional Sustainability Strategies completed.

Global opportunities

The regional 'sense of place' documents can give the social basis for development as well as the economic and environmental factors. This will be a significant achievement and generate international interest.

Further information

Armstrong, R 2002, *Developing a Strategy for Regional Sustainability in the State of Western Australia*, sustainability background paper, Draft State Sustainability Strategy CD-ROM, Department of the Premier and Cabinet, Perth.

Newman, L 2002, *Permaculture: Designing For A Sustainable Future*, sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/permaculture/Permaculture.htm>

Stanton-Hicks, E 2002, *Sustainability and the Iron Ore Industry in the Pilbara: A Regional Perspective,* sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/pilbara/pilbara.htm>

> INDIGENOUS COMMUNITIES AND SUSTAINABILITY

There is much to learn from the Indigenous people of Western Australia about sustainability. They have lived in this country for 500 generations with an integrated social, environmental and economic perspective. All social, economic and health indicators suggest high levels of deprivation.

The Sustainability of Indigenous Communities is fundamentally dependent on two factors. The first is that Indigenous Communities undertake to identify appropriate governance structures. These bodies will be ultimately responsible for development of the community and all of the process through which this will occur. If these bodies have credibility within the Indigenous Community, and are able to deal with the environment within which those communities operate, there will be resilience and cohesion necessary to implement changes for a preferred future.

The other factor is that the whole of Government undertakes to develop appropriate processes to work with Indigenous Communities. If this is undertaken in a way that respects the history, values and uniqueness of Indigenous Communities then the service required by the Indigenous Communities will deliver outcomes in line with those experienced by mainstream WA.

Department of Indigenous Affairs

Aboriginal people and their cultures are a unique and invaluable part of the State of Western Australia. They have continuing rights and responsibilities as the first peoples of Western Australia, including traditional ownership and connection to land and waters.

For Indigenous Western Australians, sustainability touches diverse areas including: Indigenous 'country' management, biodiversity conservation, protection of spiritual cultural heritage, and the essential preconditions of employment, housing, infrastructure, education, substance abuse, domestic violence, and safety and security and economic development. All of these issues interrelate and influence each other to affect Indigenous advancement.

Wealth creation in the general Western Australian community is fundamentally important in the process of addressing issues facing Aboriginal people. Certainty for industry's development proposals and security for Aboriginal peoples' cultural heritage and values must be equally respected within the overall development of the State.

Circumstances of Aboriginal people can differ significantly between regions and localities. Regional and local approaches are required to address issues that impact on Aboriginal communities, families and individuals. To achieve improvement, Government and Aboriginal people need to work together in partnership and share responsibilities. It is only through this process that sustainability can be achieved.

There are constraints to achieving sustainability including:
- divisions between communities leading to lack of resolution on many issues, lack of provision to change such patterns for Indigenous communities, and lack of capacity building and facilitation

- a lack of long term strategies, partnerships and program support for long-term change

- an inadequate service delivery model for Indigenous development

- an emphasis on commercial resource use in the policies and programs for the management of Aboriginal lands with limited consultation with Aboriginal people

- an inability to tap the groundswell movement within Western Australian Aboriginal communities to achieve commonly agreed outcomes e.g. to manage and maintain Indigenous 'Country', to maintain Aboriginal cultural heritage, provide employment, and protect and conserve Indigenous knowledge.

However, there are also promising opportunities for sustainability in Indigenous communities arising from:
- the signing of the Statement of Commitment to a New and Just Relationship between the Government of Western Australia and Aboriginal Western Australians

- the groundswell of the Indigenous community-driven movement towards managing Indigenous 'country' according to cultural groupings and on a regional 'country' basis

- the investment of Native Title Representative Bodies in community negotiation, governance, and representative structures

- the new and unique collaborative knowledge-creating work of environmentalists, ecologists, and Indigenous traditional owners that result from actual Indigenous community interaction with Indigenous lands

- the growth in mining company initiatives for training and employment of Indigenous people from the regions.

In accordance with the Statement of Commitment to a New and Just Relationship between the Government of Western Australia and Aboriginal Western Australians, the Government will work with the Aboriginal and Torres Strait Islander Commission to:

- Agree on a set of principles and a process for the negotiation of a State-wide framework that can facilitate negotiated agreements at the local and regional level.

- Negotiate a new approach in Aboriginal affairs policy and administration in Western Australia based on regional agreements.

- Enhance negotiated outcomes that protect and respect the inherent rights of Aboriginal people and to significantly improve the health, education, living standards and wealth of Aboriginal people.

Steve Kinnane's background paper *Beyond The Boundaries – Exploring Indigenous Sustainability Issues Within a Regional Focus* proposes that processes for strategic policy development be anchored in community-based programs.

The government will establish Indigenous Regional Sustainability Strategies to promote and achieve sustainability for Aboriginal communities. The process to establish these could include:

- In the short-term (over the next year) instigate a pilot project for a state-funded Aboriginal Country Management Program building upon existing Aboriginal land and sea management programs, such as in the Kimberley region.

- In the medium-term (two to three years) ensure that these programs are established through negotiated partnership agreements (Indigenous Regional Sustainability Strategies) between the state and Indigenous groups, and expand the program to other regions throughout Western Australia.

- In the longer-term (within five years, ongoing) use these programs as the basis for the development of Indigenous Regional Sustainability Strategies contributing to regional agreements that are part of the Statement of Commitment.

By investing in existing structures and initiatives, the government will be providing employment for Aboriginal rangers and supporting the development of a network of Aboriginal land and water management specialists with the capacity to drive the development of broader strategies. Western Australia will be a national leader in innovative and sustainable solutions to Aboriginal community development.

As discussed in *Regional sustainability*, it is intended to include Aboriginal stories in the 'sense of place' document to be created for each region (in the country and city). Indigenous regional sustainability can begin around the Aboriginal stories and history that are being developed as part of the Regional Sustainability Strategies, other Aboriginal arts and cultural tourism projects, and the Aboriginal history project being conducted under the supervision of Professor Geoffrey Bolton, Murdoch University. Indigenous Regional Sustainability Strategies will feed directly into the development of Regional Sustainability Strategies as outlined in the previous section.

There are other important strategies for Indigenous sustainability. The fundamentals of health, housing, safety, stability and employment are still sadly lacking for many Indigenous people. Commitments to overcoming the

underlying issues here need to be built into many government programs with the goal of improving comparable life expectancy rates as for other Western Australians. This will require partnerships. These partnerships will be effective and sustainable where they are:

- based on integrated planning, shared responsibility and accountability of outcomes
- formalised through agreement
- based on realistic and measurable outcomes supported by agreed benchmarks and targets
- clear in terms of the roles, responsibilities and liabilities of the parties
- inclusive of an agreed accountability process to monitor negotiations and outcomes from agreements.

Underlying so many of the social problems of Indigenous people is the inability to participate in meaningful employment due to a lack of education and training. Recent trends in the mining industry have demonstrated how such issues can be overcome if appropriate training is provided (see *Further information* below).

The Pilbara iron ore companies, Rio Tinto and BHP now have a goal of 12% Aboriginal employment in their companies and are well on the way to achieving this. Argyle has a goal of 15% Indigenous employment in its Kimberley operations. Other companies involved in regional development will need to address such targets.

This is part of the social charter of sustainability assessment. Companies would be encouraged as part of sustainability assessment to show how they will contribute to training Indigenous people.

In short…

Vision

Reconciliation and Native Title lead to Aboriginal organisations with sustainable employment, while retaining their communities' cultural focus. Indigenous health indicators are the same as the rest of the population.

Objectives

- Native Title is recognised, protected and progressively used to help create Indigenous community sustainability.
- Resources are managed in a sustainable manner in concurrence with regional Aboriginal cultural understandings of sustainable resource management and development.
- Indigenous knowledge is incorporated in land management activities on all public and Indigenous lands towards building skills in Indigenous communities and educating mainstream environmental and land management agencies and field workers.
- Capacity building is associated with and implemented to support the Regional Indigenous Sustainability Strategies.
- Future developments take account of regional Indigenous cultural diversity and governance.

Actions underway include

- The signing of the Statement of Commitment to a New and Just Relationship with Aboriginal people between the Government of Western Australia and Aboriginal Western Australians. This provides the framework to create regional negotiated agreements to improved governance, capacity building and economic independence.
- The Department of Indigenous Affairs supports landcare grants to Indigenous people and there are various programs to support the preservation of Indigenous culture.

In short cont'd...

- The Aboriginal and Torres Strait Islander Commission is supporting the development of Comprehensive Regional Agreements and Regional Planning processes.
- The Department of Fisheries is working with the Aboriginal community to develop fishing strategies to ensure recognition of Aboriginal fishing interests and aspirations within the existing sustainable fisheries management framework.
- The Department of Conservation and Land Management is implementing joint management strategies for conservation lands.
- The Government has committed to employ more Aboriginal people in the public sector particularly in senior levels and in decision-making roles.

Proposed actions

1.19 Develop Indigenous Regional Sustainability Strategies that will feed into the Regional Sustainability Strategies (outlined above) and regional agreements as set out in the Statement of Commitment to a New and Just Relationship jointly agreed by the Western Australian Government and the Aboriginal and Torres Strait Islander Commission.

1.20 Pilot an Indigenous Country Management Program (also known as community ranger schemes) to enhance long-term employment for Indigenous people in their regions. Trial programs will be undertaken using the Department of Conservation and Land Management and functioning Aboriginal Land and Sea Management programs.

1.21 Assist Indigenous communities to establish keeping places and interpretive centres to preserve and showcase Indigenous culture and support the intellectual property rights of Indigenous communities and artists.

1.22 Expand Indigenous Cross-Cultural Awareness Training within the Western Australian Public Sector for all employees who have involvement with Indigenous people or are involved in Indigenous policy.

1.23 Work with Indigenous and industry stakeholders to promote targets for Indigenous employment in major new resource development projects.

1.24 Continue to work to enhance housing and health programs for Indigenous Western Australians.

Indicators and targets

- Proportion of Indigenous people employed in environmental management and rehabilitation of Indigenous country as well as management of public reserves and mining rehabilitation.
- Completion of Indigenous Regional Sustainability Strategies to manage cultural and natural resources across Western Australia.
- Revitalisation of Regional Indigenous governance structures leading to reduced cycles of dependency and disadvantage.

Global opportunities

Western Australia is well placed to show global leadership on Indigenous sustainability through a practical program of initiatives, strategies and agreements. This can be a real contribution to global sustainability and become the basis for future employment in the global industry.

In short cont'd...

Further information

Kinnane, S 2002, *Beyond The Boundaries: Exploring Indigenous Sustainability Issues*, sustainability background paper, Draft State Sustainability Strategy CD-ROM, Department of the Premier and Cabinet, Perth.

Miles, N 2002, *Placer Dome, Mt Keith: Gold and Indigenous Development,* sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/grannysmith/grannysmith.htm>

Ruane, S 2002, *Indigenous Tourism: Sustainability Issues and Opportunities*, sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/indigenoustourism/indigenoustourism.htm>

Stanton-Hicks, E & Newman, P 2002, *Argyle: 'Creating a Future',* sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/Argyle/Argyle.htm>

Stanton-Hicks, E 2002, *Sustainability and the Iron Ore Industry in the Pilbara: A Regional Perspective*, sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/pilbara/pilbara.htm>

Suntrekking PV panels used to power reverse osmosis desalination systems. This technology was developed for remote Aboriginal settlements to provide clean water from solar energy. The technology is now being upscaled for use in cities.

Source: Environmental Technology Centre, Murdoch University

> RESEARCH AND DEVELOPMENT FOR SUSTAINABILITY

Sustainability requires innovation in the economy. Government leadership is required to ensure research and development assists the sustainability agenda.

Most modern economic theories recognise the importance of innovation, technology and new ideas in generating sustained economic growth. Innovation, technology and new ideas are also crucial to achieving our social and environmental goals and these goals would be best achieved through a vibrant research and development community.

Chamber of Commerce and Industry

Many of the State's sustainability challenges … require the development of new methodologies or technologies. The State's universities are an under-utilised resource in this regard. A closer alignment between the research activities (particularly in the natural and social sciences/engineering) and the needs of community to develop more sustainable practices would be a major contribution to the State's sustainability.

Western Australian Local Government Association

Many submissions called for more research and development for sustainability in Western Australia.

Government must work in partnership with other stakeholders to conduct research and development. In 1998/99 the Western Australian Government conducted research and development worth $92 million. During the same year industry undertook research and development worth $434 million, universities $225 million and Commonwealth government agencies $64 million.

The Office of Science and Innovation was established on 1 July 2002 to provide support for the science community in Western Australia. The Centres of Excellence in Science and Innovation program is administered through the Office and provides funding support for commercially oriented research. Generally, centres are established as a partnership between universities, CSIRO, the private sector and/or public sector agencies.

The Office of Science and Innovation currently provides almost $7 million, or 30% of current program commitments, to 10 centres which have a recognised focus on sustainability issues.

These are:

- The Centre for Management of Arid Environments
- Centre for Organic Waste Management
- Cooperative Research Centre for Biological Control of Pest Animals
- Centre for Marine Science and Technology
- Centre for Water Research
- WA Centre of Excellence in Industrial Optimisation
- Centre of Excellence in Natural Resource Management
- International Environmental Technology Centre
- Centre for Sustainable Mine Lakes
- Cooperative Research Centre in Dry Land Salinity

Further support is envisaged with seven proposed Cooperative Research Centres (CRCs) currently under consideration:

- CRC in Application of Earth Observations
- CRC in Sustainable Tourism
- CRC in Greenhouse Gas Technologies
- CRC in Environmental Biotechnology
- CRC in Renewable Energy
- CRC in Coastal Zone, Estuary and Waterway Management
- CRC in Sustainable Minerals and Metals Processing.

The Centre of Excellence in Cleaner Production at Curtin University is funded through the Western Australian Government's Waste Management and Recycling Fund. The government is also assisting in the establishment of a new centre called the Global Centre for Sustainability. This centre is a partnership between the five Universities, CSIRO, the State Government and private industry. The aim of the centre is to develop partnerships around major international funding opportunities from the World Bank, AusAID and the Asian Development Bank. These large projects require innovation in sustainability that is often very evident in Western Australia, but this state rarely is considered for such projects. The Global Centre for Sustainability will facilitate the necessary support to seek out and form the government-university-industry partnerships so often needed to compete globally.

BOX 12   BIODIVERSITY RESEARCH IN WESTERN AUSTRALIA

The Department of Conservation and Land Management (including the Herbarium) has a $10 million budget for 180 environmental research projects, primarily based on describing and documenting the state's biological diversity and how it can be conserved.

In Australia, some 6000 species are under threat and 40% of these are in Western Australia. Species recovery has occurred for three threatened mammals as a result of research undertaken by the Department of Conservation and Land Management. The Botanic Parks and Gardens Authority has a budget of $0.8 million for similar biodiversity work. Kings Park discovered the effect of smoke on the germination of native plant seed which has enabled the horticulture and landcare industries to access 20 per cent of the Australian biota previously considered unavailable for propagation. The Western Australian Museum also research bio- and geodiversity and recently won the Golden Gecko Award for its research and development with Woodside on the Dampier Archipelago. The Zoo conducts research on global biodiversity issues such as orangutans as well as some native species. The biodiversity of the marine environment is only just beginning to be researched in comparison with other parts of the environment.

The Western Australian Government has undertaken a considerable amount of research and development in sustainability (see Box 12 and 13). There is a need to prioritise government research and development in sustainability and to encourage partnerships with other research and development groups in government, universities, CSIRO and industry. It is proposed that a Science Council–CSIRO forum on sustainability science be held with all relevant research and development groups to help develop priorities and partnerships, especially in the light of CSIRO's Healthy Country initiative (see Box 14).

Sustainability science is emerging as a new discipline that integrates perspectives on large scale and regional scale sustainability issues, allowing scenarios to be drawn up and modelled.

BOX 13   NATURAL RESOURCE MANAGEMENT RESEARCH

The Water and Rivers Commission allocates between $1 and $3 million per year to jointly funded projects water management research projects. These projects include the development of a computer model to understand the extent and dynamics of all the ground water aquifers in the Perth basin and how they are linked. This will enable government to decide how to optimise the use of the aquifers and minimise environmental impact. This million-dollar project is attracting world attention.

The Water Corporation spends $4 million on research and development a year and its MIEX plant, opened by the Premier in 2002, is a world first water purification plant based on joint research with CSIRO that magnetically removes organic pollutants from water.

The former Department of Environmental Protection allocated $5 million to research that allowed the establishment of clear environmental criteria for managing water in Cockburn Sound enabled Pilbara air quality studies to reduce dust impacts as well as air toxin research on personal exposure and health monitoring and the public health aspects of air quality.

The Department of Agriculture's research and development budget is the biggest of the State's budget of $48 million per year. This reflects its value to the Western Australian economy of $4.6 billion per year. Research is conducted on new agri-industries, ecologically sustainable agricultural practices and protecting the resource base. The Department of Agriculture allocates around $11 million per year to salinity monitoring and management studies including rapid catchment appraisal work based on satellite imagery and data from 7000 bores linked to a database. The Department of Agriculture is also doing research on nutrient management in the Peel Harvey, Wilson Inlet and Albany Harbours, including groundbreaking work with local community involvement in Denmark. An innovative project to remove phosphorus from the Swan Canning system through 'Phoslock' technology has been developed jointly with UWA and CSIRO.

BOX 13   NATURAL RESOURCE MANAGEMENT RESEARCH CONT'D

The Department of Conservation and Land Management has a number of biodiversity recovery catchments that are threatened by salinity, to ensure all is done to prevent loss of species. Lake Toolibin is being pumped to enable plant life to survive that would have died from saline invasion.

Forest Production Commission spends $3.5 million per year on research into how salt affected land can be remediated through reafforestation. With the Department of Conservation and Land Management they are investigating how oil mallees could help revitalise rural land and local communities through new industries and power generation.

The Department of Fisheries allocates $10 million to research and development to ensure the sustainability of the state's fisheries.

In a state as large as Western Australia it is important to have good data on the land and its resource base. Western Australia has internationally recognised research and development that is constantly tapping the new technology of satellite imagery and ground-truthing with detailed surveys. The Geological Survey maps geological resources. The Department of Land Administration and the Leeuwin Centre map all land surface characteristics using different parts of the light spectrum to enable land management to be pursued. The proposed Cooperative Research Centre in Earth Observations will make more productive use of these data and make it more accessible to decision makers.

BOX 14   CSIRO 'HEALTHY COUNTRY' PROJECT

'Healthy Country' is one of CSIRO's seven 'Big Hairy Audacious Goals' which is redefining how CSIRO will do a significant proportion of its research.

One of four focus regions for this project will be the South West of Western Australia with biodiversity, land degradation and water questions paramount. The research it will undertake can provide answers to many of the deep questions that face us by focussing on key areas of knowledge and innovation. The priority of this research will be determined through processes involving scientists, industry, the community and government.

They will be seeking to locate the significant research that can really make a difference, unlocking solutions to broad scale systems of land and water ecosystems as well as their human and social context. The State Sustainability Strategy recommendations and implementation will be closely tied into this project.

In short...

Vision

Western Australia is recognised around the world as a global centre for research and development on sustainability that is not only innovative globally but is practical and relevant to solving Western Australia's problems.

Objectives

- Initiate research and development targeting sustainable outcomes for Western Australia's land, water, air and other natural resources.
- Make Western Australian industry and resource use more efficient.
- Facilitate Western Australia's involvement in the global sustainability economy.
- Create long-term jobs for Western Australians.

Actions underway include

- Many state government agencies undertake research on sustainability issues.
- The Western Australian Government provides funding to support Centres of Excellence through the Office of Science and Innovation and other research organisations.
- The Institute for Regional Development has been established at the University of Western Australia.
- Edith Cowan University in Bunbury has established a Professorial Chair in regional development.

In short cont'd...

Proposed actions

1.25 Assist in the development of the Global Centre for Sustainability as a partnership for sustainability research and development in Western Australia. The Global Centre for Sustainability would facilitate partnerships between the 5 universities, TAFE, the CSIRO, the State Government and industry on globally significant sustainability projects.

1.26 Continue to support bids for Commonwealth funding for CRC's and other research funding programs related to sustainability.

1.27 Through the Science Council, Office of Science and Innovation and with all relevant research and development groups (including CSIRO), determine research priorities and partnerships in sustainability research and development, including social science aspects.

1.28 Endorse the CSIRO's commitment to implement the Healthy Country initiative in the South West of Western Australia.

Targets and indicators

• Implementation of relevant products, services and technologies.

• Research and development on sustainability issues through or partnered with the State Government.

Global opportunities

The global market for environmental technology has been estimated to be worth $1 trillion dollars and funding on global aid is similarly enormous. The strategies outlined above are designed to enable Western Australia to access these markets as well as solving many of the sustainability challenges of our own State.

Further Information

The Centre of Excellence in Cleaner Production, Curtin University <http://cleanerproduction.curtin.edu.au/>

Environmental Technology Centre, Murdoch University <http://wwwies.murdoch.edu.au/etc/ >

Premiers Science Council <http://www.sciencecouncil.dpc.wa.gov.au/>

Centres of Excellence in Science and Innovation Program <http://www.dpc.wa.gov.au>

> **SUSTAINABILITY INFORMATION ONLINE**

Information is critical to sustainability but it needs to be integrated and accessible.

Government must support community access to the latest research, data and technology to enable improved land management.

Environmental Alliance

To tell how we are tracking on the sustainability agenda in the management of land, water, air and settlements it is essential to have a mechanism that allows regular periodic reporting of progress. Available systems provide an incomplete picture.

For example, the Australian Bureau of Statistics regularly reports economic data including the cost of living, inflation, unemployment etc, at the national and state scale, yet reports on occasional social measures like crime rates and population changes by state. Periodic State of the Environment reporting at state, as well as regional and local government levels, provides information on the environment and natural resource management but this is rarely as available as economic and social data.

For sustainability to be effective we need to harness the data sources for all three elements into a more integrated information system that is readily available to decision makers and the public. This will enhance the power of community groups and agencies working on sustainability issues.

At the national level an approach has been made through such work as the National Land and Water Resources Audit that has brought together social, economic and environmental data in some cases, for particular areas. However it is important to develop a state system for monitoring, data analysis and reporting on sustainability.

Sustainability cannot be delivered without accurate, up-to-date and reliable land and geographic information. Geographic information helps us to understand and form effective strategies to address critical sustainability issues such as salinity, forest management, native title, land use conflict and infrastructure planning. Easy access to information is crucial to the success of the strategy.

Co-ordination of the development, management and access to land and geographic information is critical to the success of the Sustainability Strategy. The Western Australian Land Information System is a key avenue through which policies relating to the provision of land and geographic information can foster the goals of the State Sustainability Strategy. Government will support coordinated approaches to the continued development of suitable land and geographical information.

The WA Atlas is an interactive mapping service managed by the Western Australian Land Information System and provides free access to reliable information to assist government, community and industry, to support improved environmental planning and decision making. The WA Atlas enables users to overlay different geographic datasets, including coastal, infrastructure, topographic and environmental themes, to meet their differing needs.

The Government will establish a Sustainability Online web site which will be an atlas of Western Australia resources combining and integrating economic, environmental and social information. Sustainability Online will be designed to make information easily accessible to government, community and industry. This system will service many users at a range of scales and provide the most up to date available.

This site will build on the work of the Western Australian Land Information System, the Department of Environmental Protection, the Australian Bureau of Statistics, the National Land and Water Resources Audit and the Department of the Local Government and Regional Development.

This site will be a support tool for Government to provide the public with an understanding of the state of the environment and sustainability issues in general. Access to a range of environmental data will result in easier and better decision making on state development projects. Proponents are frequently required to create their own environmental information, as they are unable to locate or obtain this information from Government. This leads to increased costs and data is produced that may not be using the appropriate standards.

Initially it will be the major source of up-to-date environmental information. However, in time it will include integrated social and economic data sources that support improved natural resource management, as new indicators for progress towards sustainability emerge. It will provide a portal to already functioning web sites on sustainability such as the Department of the Premier and Cabinet's sustainability web site and the Sustainable Energy Development Office web site.

Over time the site will include locally and regionally monitored community data where this is important to the sustainability of that local or regional area.

The system will, for the first time, incorporate a range of natural resource management spatial datasets including those created through:

- Land Monitor
- National Land and Water Resource Audit
- NW Shelf programmes
- Salinity Action Plan
- State of Environment Report
- Metropolitan Air Quality
- Greenhouse
- Sustainability projects
- Regional and catchment planning
- Biodiversity data from CALM / Museum / Botanic Gardens Authority;
- Water quality data.

The site will contain advice and policies generated by the Environmental Protection Authority, spatial data with mapping capabilities, metadata search and input tools, scientific reports, and other environmental statements and reports. Integration of the data at the regional scale will be attempted in the next few years as part of the development of Regional Sustainability Strategies.

In short...

Vision

An internet one-stop-shop provides easy access for anyone wanting sustainability information from government.

Objectives

Improve access to sustainability information to increase the capacity for all stakeholders to make informed decisions about environmental and sustainability issues.

Actions underway include

- The Land Monitor Project provides fundamental datasets for environmental monitoring and assessment.
- The Departments for Planning and Infrastructure and Environment, Water and Catchment Protection have established an inventory within the online Western Australian Land Information System 'Interrogator' to provide a central database for storing government and non-government information (metadata) on Western Australia's natural resource datasets.
- The Department of Fisheries publishes an annual State of the Fisheries report which reports in detail on the activities and impacts of the commercial and recreational fisheries and aquaculture sectors in Western Australia.
- Websites with considerable public information are available in most government agencies, e.g. Sustainable Energy Development Office, Water Corporation.

Proposed actions

1.29 Work to establish Sustainability Online to deliver the government's election commitment to establish a 'one-stop-shop' for sustainability information. Sustainability Online will be accessible to the public through the internet and will list and integrate environmental, economic and social data from a range of sources including community data collected by local groups, schools and universities.

Indicators and targets

- The extent to which information used for guiding sustainability assessments and policy is accessible.
- The extent to which information systems can be used for guiding sustainability assessments and policy.

Global opportunities

The problem of integrating data and making it accessible to the public is a universal issue. If Western Australia can adequately address this issue it will be of global significance. The involvement of the staff of the Department of Land Administration in global development projects has shown how our land data systems can be of value in major aid projects.

Further information

Department of Environmental Protection
<http://www.environ.wa.gov.au/>

Sustainable Energy Development Office
<http://www1.sedo.energy.wa.gov.au/>

Water and Rivers Commission
<http://www.wrc.wa.gov.au/>

Western Australian Atlas
<http://www.walis.wa.gov.au/content/wa_atlas_popup.html>

> RECOGNISING SUSTAINABILITY EXCELLENCE

Sustainability needs leadership from individuals or groups from across the whole community. When this occurs such leadership should be recognised and celebrated.

> *Innovation that leads to less resource use, cleaner production and help meet sustainability targets (eg. Greenhouse gas emissions) must be supported and rewarded.*
>
> Swan Catchment Council

> *Sustainability awards and recognition could occur.*
>
> WA No-Tillage Farmers Association

To this end the Western Australian Government will establish an annual Sustainability Award that will recognise major achievement in sustainability in Western Australia. The award will be for innovation in sustainability on a global scale and will demonstrate core sustainability principles.

In short...

Vision

Winning a Sustainability Award becomes widely accepted as the form of recognition for excellence in sustainability in Western Australia.

Objective

Recognise and celebrate leadership in sustainability in Western Australia.

Actions underway include

- The Premier's Awards For Excellence In Public Sector Management recognise achievements across the triple bottom line in each of the existing categories.
- The Great Southern Development Commission has instituted a regional award for sustainability.
- The Minister for Environment and Heritage has instituted the Environment Awards.

Proposed action

1.30 The Government will create an Annual Sustainability Award to recognise significant achievement in sustainability.

4

Contributing to global sustainability

Vision for Western Australia

Western Australia contributes to the solution of global sustainability issues particularly population pressures and poverty, climate change, threats to biodiversity and oil vulnerability and in so doing creates significant local opportunities for new jobs in the rapidly growing sustainability economy.

Goal

Play our part in solving the global challenges of sustainability.

Priority areas for action

> *Ecologists understand that all economic activity, indeed all life, depends upon the Earth's ecosystems. Economics knows how to translate goals into policy. Economists and ecologists working together can design and build an eco-economy, one that can sustain progress'*
>
> Lester Brown[9]

Sustainability gained wide acceptance globally in the 1980s. It was a political response to the tension that existed between the ecological perspective, which highlighted the impacts that development was having on the Earth, and the social justice perspective which argued that the 1 billion people whose basic needs were not met needed development to provide housing, health care and jobs.

In 1987 the Brundtland Commission attempted to resolve this tension by saying that it was possible to redefine development so that it enabled the poor to benefit and did not increase the burden on the world's ecological systems. Sustainable development required that social and ecological considerations be incorporated fully into economic development - not 'bolted on afterwards' and required economic decisions to occur within an ecological and social context.

In this section, the draft State Sustainability Strategy considers the global sustainability agenda and suggests how Western Australia can contribute to global sustainability. Economic opportunities are also emerging for nations and states that take the sustainability agenda seriously and these are highlighted.

The draft Strategy identifies four key areas that provide opportunities for Western Australia to contribute to global sustainability:

- Population, development aid and environmental technology
- Maintaining our biodiversity
- Responding to greenhouse and climate change
- Oil vulnerability, the gas transition and the hydrogen economy.

> POPULATION, DEVELOPMENT AID AND ENVIRONMENTAL TECHNOLOGY

The government will participate in the global sustainability agenda to reduce global population growth, contribute to development aid, reduce consumption and improve technology.

> *The World Bank has reported that there are now 25 million environmental refugees. The world population today is divided between the high consumer, high living standard nations with near stable populations and the desperately poor in the third world countries whose populations are growing rapidly. The world's richest nations with 20% of the world's population account for 86% of the world's consumption while the poorest 20% of the world's people account for only 1.3%.*
>
> Sustainable Population Australia (WA)

The global population needs to stabilise, as a continuously growing population undermines sustainability. The world's population increased to 6.2 billion in 2001, more than double the population in 1950[10], though recent estimates suggest that if birth rates continue to decline then the population may stabilise at 8 to 9 billion[11].

Population issues and the capacity of Western Australia to absorb growth are considered under *Sustainability and settlements*, particularly the sections on *Water supply and Managing urban and regional growth*. This section largely concentrates on the global aspects of population and what Western Australia can do about it.

[9] L Brown, *Eco-Economy*, Norton, 2001, p. 4.

[10] D Nierenberg, *'Population Growing Steadily', Vital Signs 2002-2003*, Earthscan Publications Ltd, London, 2002.

[11] United Nations Population Division, *World Population Prospects: The 2000 Revision, Volume III: Analytical Report*, United Nation, NY, 2002.

Extensive evidence suggests that high birth rates in developing countries (and parts of Australia with similar problems) begin to drop quickly when:

- women are educated
- people have enough food so that their children don't have to work
- there is political security
- children attend school
- basic health care is provided
- some form of social security is available.

Social and economic development is therefore critical to stabilising global population growth and it is important to consider what Western Australia can do to play its part addressing this fundamental sustainability issue.

Some Western Australian firms and individuals are already involved (see Box 15) as are non-government organizations, such as Oxfam Community Aid Abroad, and government agencies (see Box 16).

BOX 15   HARRY NESBITT: THE RICE GOD OF CAMBODIA

Harry Nesbitt, a Western Australian scientist, went to Cambodia on an Australian aid project to help reconstruct agriculture after the 'killing fields' virtually destroyed rice-growing capability. Over thirteen years Harry developed a team who identified the best rice to use for local conditions and trained people in new production techniques. Cambodia is now an exporter of rice and Harry's contribution has been recognised by many international and Cambodian awards.

Western Australia can play its part in supporting development by encouraging research on sustainability technologies with a global sustainability focus and ensuring government agencies are sharing their expertise with developing countries. Many agencies are already involved in aid projects providing their expertise through World Bank and AusAID projects. New opportunities can also be pursued through the trade agenda. The government can encourage reduced resource consumption through a variety of initiatives and undertake research to better understand the relationship between population and consumption issues in Western Australia.

BOX 16   GOVERNMENT AGENCY INVOLVEMENT IN OVERSEAS PROJECTS

Western Australian Government agencies have been involved in overseas aid projects for many years.

AgWest International is the international project unit of the Department of Agriculture. This unit is undertaking work in:

- East Timor - developing maps on agriculture and training locals to create maps through GIS.
- India - training people in apple production techniques.
- Vietnam - potato production training.
- China - training in livestock, post harvest and crop production techniques.
- Middle East - training in horticulture and livestock in Egypt and Jordan.

The Department of Land Administration, through DOLA International, is working in Bangladesh, Sri Lanka and East Timor on developing land titling and administration systems that are critical to enable financing for any development.

Environment agencies are involved in pollution control projects in Indonesia, Vietnam and Thailand, after long term involvement in several Middle East countries. The Water and Rivers Commission conducted a detailed water plan for the Sultanate of Oman.

The Department of Training, through TAFE International WA, has recently won a $50 m oil and gas training project in Qatar. Training projects have been undertaken in China, East Malaysia, Hong Kong, Mauritius and the United Arab Emirates. Training International students who come to study in Western Australia is an important contribution to international development, contributing some $600m annually to Western Australia.

The Department of Industry and Technology, through its International Projects section, has projects in Leeds (UK) on its GEMS technology and with the Asian Development Bank on electronic procurement strategies.

The Department of Mineral and Petroleum Resources has delivered a number of overseas projects related to mining, oil and gas exploration and development, the administration of mining tenements, environmental assessment and legislation. Projects have been undertaken in Eritrea, Pakistan, Ethiopia, Mongolia, China, Vietnam, Hong Kong, Myanmar, Sri Lanka and India. The biggest project involved a series of training exercises through the Channar Fund in China.

Population, consumption and technology

It is obvious that many sustainability issues are related and overlap. Addressing sustainability will require recognising these relationships and seeking ways to resolve them. Population influences many different issues and this was reinforced by many submissions. In particular, submissions pointed to the links between population, consumption and technology (see Box 17).

The draft Strategy will address consumption and technology by highlighting the many ways of reducing unnecessary and wasteful resource use, and the technologies that offer hope in many areas.

BOX 17   POPULATION X CONSUMPTION X TECHNOLOGY

Professor Paul Ehrlich defined global environmental impact as a combination of three factors based on the simple formula:

I	=	P	x	R/P	x	I/R
Input		Population		Consumption of resources per person		Technological impact per unit of resource used

Ehrlich and many others emphasise population as the issue; others tend to suggest the real problem is consumption or lifestyle, and others emphasise technology. This draft Strategy will try to account for all three factors and to find the opportunities that this difficult formula presents.

Some general points will be made first about this global context though most of the detail on consumption and technology will be found in particular issues in the draft Strategy. One side of the sustainability debate asserts that for the poor of the world there is a case for them to have greater access to the fruits of the earth. The other side of the debate asserts that overall the world should learn to reduce its ecological footprint–to learn to live with less energy, less water, less materials and less land. Both should be possible.

There is a new market for firms that can demonstrate resource efficiency, while improving quality of life and a need for infrastructure and government processes to facilitate this. Such opportunities will become important parts of the new global economy. For example if people in Western Australia can show how they can adapt to living with a more constrained use of water, then this will have global ramifications. Many other examples of how reduced consumption can be achieved, while improving quality of life, will be outlined in the draft Strategy, including through procurement, full life cycle assessments, greater use of recycled materials in buildings, stronger local communities and so on.

There are many global processes attempting to guide technological development so that it is more sustainable. Increasingly it is found that small-scale renewable energy systems or clever waste management or more energy and water efficient buildings, are not just for villages in the developing world, but for everyone.

Environmental technology is the fastest growing area of technology today. The global market is conservatively estimated at $1 trillion by a recent Federal Government report[12] that said, 'We are entering the era of sustainability, with the environment industry moving into the mainstream of business life.'

[12] Leaders Group, *Investing in Sustainability*, Department of Industry, Science and Resources & Environment Australia, Canberra, 2001.

This report urges Australians to invest in sustainability, as there are endless opportunities for innovation and employment in this global market. Already in Western Australia there many firms and individuals developing globally significant environmental technology (see Box 18).

BOX 18   WESTERN AUSTRALIAN INNOVATIONS IN ENVIRONMENTAL TECHNOLOGY

Orbital Engine Corporation

Orbital Engine Corporation has developed a two-stroke motorbike engine that has much reduced emissions. The economic opportunities and the air quality improvements for smoggy Asian cities are significant.

The 4 stroke car engine has been demonstrated to provide significant air quality benefits as well.
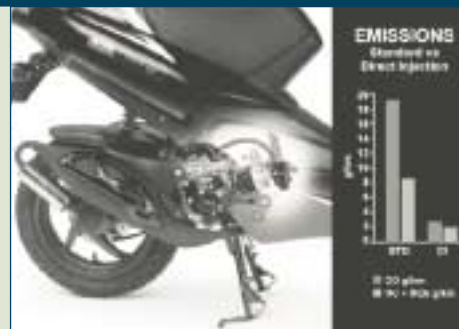
Source: Orbital Engine Corporation

Ecomax and Biomax

Ecomax and Biomax are two of several Western Australian companies that have developed small-scale sewage treatment systems and are also involved in several aid projects. One such project provided sewage treatment to a squatter village in Indonesia and demonstrated that a small community can manage waste and improve health with the aid of these simple new technologies.

Source: Peter Newman

As part of the approach to global sustainability that recognises the role of environmental technology in solving the sustainability problems of the future, the government will support a number of initiatives including promoting Western Australian environmental technologies and facilitating research and development through a new Global Centre for Sustainability.

In short...

Vision

Global population is stable and consumption is reduced to achieve a smaller 'ecological footprint' through sustainable technology and management. Basic needs are met for all people and global ecosystem processes are restored and in balance with human needs. Western Australia contributes significantly to this transition.

Objectives

- Ensure that Western Australia is part of the global economy opportunity provided through environmental technology.
- Enable Western Australia government agencies, industries and non-government organisations to be linked into global aid programs that can assist in grass roots development and population control.
- Facilitate education at all levels about global sustainability issues, including population.
- Create new opportunities for research and development on global sustainability issues to ensure Western Australia is well placed to contribute to major global aid projects.

Actions underway include

- Research and development in environmental technology is facilitated through funding research bodies such as Curtin University's Centre for Cleaner Production and Murdoch University's Environmental Technology Centre.

In short cont'd...

- Department of Fisheries provides advice to Indonesia and the Pacific Islands in relation to fisheries management practices and associated issues.
- Perth Zoo fosters a strong in-situ conservation ethic by participating in internationally renowned conservation breeding programs, for example Sumatran Tigers and Sumatran Orang-utans.
- The government provides some industry facilitation in support of global environmental technology markets.
- Some local industries and universities are involved in global sustainability markets.

Proposed actions

2.1 Help create the Global Centre for Sustainability to bring Western Australian expertise into global development projects through a partnership between the five universities, TAFE, the CSIRO, industry research and development and government agency research and development in sustainability.

2.2 Assist government agencies where appropriate to be positioned to win or participate in projects in developing countries.

2.3 Promote Western Australian environmental technologies in global trade through the Environmental Industries Unit within the Department of Industry and Technology.

2.4 Facilitate research and development in environmental technology through the support of new and continuing Centres of Excellence and Cooperative Research Centres.

2.5 Conduct a study on the relationship between Population and Consumption in Western Australia (as recommended by the 1998 Western Australian State of the Environment Report[13]).

Indicators and targets

- Number of global aid projects involving Western Australian government agencies.
- Major overseas sustainability projects in developing countries conducted by Western Australian organisations and agencies.

Global opportunities

There are considerable and growing economic opportunities for Western Australians to be involved in the global sustainability issues of population, development aid and environmental technology. Government agencies can become significant participants in this global economy, particularly in aid projects, which often require substantial government involvement for credibility and capacity building. Partnerships with business and researchers will be made through the Global Centre for Sustainability to attract large aid projects to Western Australia. The key step is for Western Australians to recognise that their innovations in sustainability have global significance.

Further reading

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United Nations Environment Program, International Environmental Technology Centre http://www.unep.or.jp/

Australian Government Overseas Aid Program http://www.ausaid.gov.au/

[13] Government of Western Australia, *Environment Western Australian 1998: State of the Environment Report*, 1998.

> MAINTAINING OUR BIODIVERSITY

Conservation of Western Australia's biodiversity, and the landscapes and seascapes that support it, is a key plank of sustainability. Further, we have an obligation to the global community to conserve these values. Giving meaning to sustainability involves reversing the decline of the biodiversity of Western Australia.

Because there are a number of ways to achieve economic and social outcomes, but few alternatives for maintaining biological diversity, we believe that the requirements for maintaining the unique biological wealth of the south west should set the framework within which other aspirations are met. That is, the requirements for ecological sustainability should limit the actions that are taken to meet economic and social goals.

Greening Australia (WA)

Western Australia contains an enormous variety of environments that support a large proportion of the world's biodiversity, both terrestrial and marine. The South West of the state is considered to be an important node of biodiversity on a world scale, because of the high number of species, high degree of endemism and the threats to those biodiversity values. The Fitzgerald River National Park has as many species of plants, animals and other organisms as the whole of the Murray Darling Basin (around 100 times the area of the Park).

This global focus on the state's biodiversity reflects the following facts:

- Western Australia's flora is not completely known, but includes around 10,000 species, of which a high proportion are found nowhere else. Of these, 16 plant species are presumed to have become extinct since European settlement, and a further 348 are formally gazetted as rare and threatened.

- The terrestrial vertebrate fauna is better known, and also includes 13 taxa that are presumed extinct, 86 species that are rare and threatened, and 11 species that are in need to special attention.

- The list of rare and threatened fauna also includes snails, spiders and crustaceans (38 species); however, the invertebrates of the State are poorly documented and may well include a much larger number of rare and threatened taxa.

- The state's marine ecosystems are also rich in species although poorly documented. In particular, the coral reefs of the west coast are of global significance.

This substantial decline in terrestrial and aquatic biodiversity is largely a result of habitat loss through clearing and subsequent salinisation (in the wheatbelt), through overgrazing (throughout the rangelands), and because of the presence of foxes and feral cats.

Biodiversity conservation is intimately linked to issues of population growth and consumption, planning and development, greenhouse and the management of natural resources. As well, there are emerging issues that have the potential to impact on biodiversity. For example, there are risks that genetically engineered organisms and other genetically manipulated material could escape into the wild and affect the reproduction of naturally occurring plants and animals.

Western Australia's South West region has recently been identified by a group of international scientists as one of only 25 Global 'Biodiversity Hotspots'[14]; no other part of Australia has achieved this recognition. The west coast of Western Australia (between North West Cape and Perth) is also recognised as one of the 18 world tropical marine biodiversity hotspots, ranked second in terms of endemism.[15]

The state's global biodiversity conservation responsibilities are now well documented and there are increasing global processes to monitor our performance in management of these special areas.

Apart from the moral obligation to see that Western Australia's special biodiversity status is recognised and acted upon, the state has obligations under international treaties on biodiversity such as:

[14] Myers et al. 'Biodiversity hotspots for conservation priorities.' *Nature* Vol 403. 24 February 2000. pp. 853-858.

[15] Roberts et al, 'Marine Biodiversity Hotspots and Conservation Priorities for Tropical Reefs', *American Association for the Advancement of Science*, vol. 295, 2002, pp.1280-4.

- Convention on Wetlands of International Importance, especially as Waterfowl Habitat (Ramsar Convention)
- Asia-Pacific Migratory Waterbird Conservation Strategy: 2001-2005
- Convention on Conservation of Nature in the South Pacific (Apia Convention)
- Montreal Process
- Convention on Biological Diversity (Biodiversity Convention)
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- Convention for the Protection of the World Cultural and Natural Heritage (World Heritage Convention).

The responses to Western Australia's international biodiversity obligations have been occurring for some time. They include:

- Continuous improvement in the management of the Shark Bay World Heritage Property. Two of the six pastoral leases have been purchased for conversion to National Parks.
- Eleven wetlands have been nominated as Wetlands of International Importance (Ramsar Wetlands), and are being monitored to ensure that their values are not compromised.
- The Western Shield program for the control of foxes has led to the recovery of three native mammal species to the extent that they have been removed from the list of rare and threatened fauna.
- The Zoo's international research links that enable it to contribute to the preservation of global biodiversity as well as contributing to the preservation of Western Australian species.
- The Botanic Gardens and Parks Authority is continuing to make an important contribution to global conservation through its research and horticulture programs on rare plant species in the state.

The Western Australian Museum has also extended its survey program through the Indonesian Archipelago as a contribution to understanding global biogeographic patterns. And the fox and feral cat predator control programs are nationally and internationally acclaimed. Some of these programs are now accessible to the members of the public, as volunteers (Box 19) or as participants of the Department of Conservation and Land Management's Landscope Expeditions.

BOX 19   VOLUNTEERS AT THE DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT

Volunteers in nature and biodiversity conservation express the Western Australian spirit that so fundamental to sustainability.

Throughout Western Australia, the Department of Conservation and Land Management has 5,000 volunteers who help manage the state's National Parks and Reserves and assist with maintenance of plant collections at the Western Australian Herbarium.

Volunteers range from young students who volunteer on weekends and during their holidays, to retirees people who may spend several days a week on the job. Volunteers are given significant responsibility and have training commensurate with this.

As Kieran McNamara, A/Executive Director of the Department of Conservation and Land Management says, 'Our volunteer program is a key part of working with the Western Australian community'.

A significant step in achieving biodiversity conservation has been the ending of old growth forest logging and the establishment of thirty new National Parks.

One of the visionary processes that is emerging in rural Western Australia are the plans to establish corridors of bush across the state. There are many small reserves and patches of remnant bush on farmland that need to be linked up to the state's existing reserves. Corridors are being planned from east of Esperance through to the west coast (see Box 22 Gondwana Links in *Sustainable agriculture*), and extending 1500 km North-South to join up malleefowl habitat in the east of the state (see Box 20). These and other corridor initiatives are coming from non-government organizations and farmers.

The global market for nature-based tourism is large and growing rapidly. It is critical that future developments based on this industry are consistent with sustainability principles so that this global curiosity about our unique environment ultimately provides real gains for the biodiversity values on which the developments depend.

There are obvious social dimensions to biodiversity conservation activities. The importance of activities like nature-based tourism and community-based nature conservation is not just economic, but it is part of what defines our identity–as Western Australians and as local communities. Western Australians are proud of our wildflowers and interesting fauna, and this is an important part in defining who we are as a community. In each region a particular 'sense of place' is fundamental to defining local community, to creating a sense of belonging. Box 20 outlines how the Western Australian Mallee Fowl Association has helped generate a sense of community in the Gnowangerup area.

BOX 20   IT'S 'GNOW' OR NEVER ...

The Malleefowl Preservation Group formed ten years ago around the goal of saving the ,Gnow bird, Nyoongah for malleefowl. By the 1980s, the bird on the Gnowangerup Shire emblem appeared to be endangered. The local community began to rally around the cause of saving habitat and protecting the malleefowl from foxes and cats.

A sophisticated network tracks the birds to their nesting mounds and informs local action to protect them. Fences are constructed and people even camp nearby for critical phases of the nesting. Intensive baiting of feral animals is also undertaken.

Susan Dennings, the President of the Malleefowl Association, says that the local community has been strengthened by their actions to save the malleefowl; 'Not only do we share a common interest but it has helped us all to get to know and love our local environment so much more. As a result the broader issues of managing the land more sustainably are able to be addressed.'

The vision of the group is to construct wildlife corridors through private farms linking known malleefowl sites to reserves. These corridors are being planned to stretch 1500 km North-South and are attracting enormous support from farmers and community groups keen to link their actions to a major visionary conservation exercise. They are part of the Gondwana links project (see *Sustainable Use of Natural Resources: Sustainable agriculture*).

A heritage centre called Yongegnow is being planned in nearby Ongerup, which will be a major tourist attraction focussing on the malleefowl and its habitat. The story of Ongerup and similar towns is a reflection of the status of this 'icon' bird and hence its revival and rehabilitation is an important part of the revival of the region. The Yongegnow centres will act as a scientific base where eggs will be incubated and taken to new areas along designated malleefowl corridors.

The Malleefowl Association plays a critical role in defining the character of the communities of the south-eastern wheatbelt and helps to create a clearer sense of their future.

Indigenous involvement in biodiversity conservation and land management is an integral part of Aboriginal history and culture (read about Mike Hill who is featured in the *Sustainability WA* exhibit on the CD-ROM). The Western Australian Government is now moving to recognise how this can be directed into creative public and private enterprises. Indigenous involvement in managing National Parks and creating nature-based tourism ventures has significant growth potential and can be a very important contribution to sustainability in Western Australia as will be indigenous involvement in processes for bioprospecting.

In short...

Vision

Western Australia is playing its part to ensure the world has a comprehensive, adequate and representative reserve system with complementary private biodiversity conservation reserves linked through corridors across the state. The intervening matrix of farmland is managed so as to minimise threatening processes. The loss of native species of flora, fauna and other organisms and habitats has been halted, and programs are in place to recover any remaining threatened species and ecological communities. There is widespread knowledge and understanding of, and appreciation within all parts of the community for all elements of the biodiversity of the state, and this supports improved planning and management of the environments of the state. Biodiversity is the source for many new products, especially in health, and this production contributes significantly to Western Australia's economy. Nature-based recreation and tourism (with Indigenous cultures central to its management) is the main recreational pursuit worldwide, and Western Australia plays a significant part in this transition.

Objectives

- Fully engage in implementing within Western Australia the international treaties concerned with environmental protection and biodiversity to which Australia is a signatory.
- Protect all biodiversity values through appropriate legal means, supported by strategies and plans, including plans for the development and on-going management of a world class, comprehensive, adequate and representative system of national parks, nature reserves, marine parks and other conservation reserves, and plans for off-reserve conservation across the intervening matrix.
- Enable industries to grow that can protect and enhance Western Australia's biodiversity such as nature-based tourism and bioprospecting, while ensuring that the links between biodiversity conservation and Indigenous knowledge are properly acknowledged.
- Create awareness and pride in all the biodiversity features of Western Australia, including these features that are regarded as special, and facilitate the involvement of the public in the management of these features.
- Establish and maintain a whole-of-government environmental database that incorporates the results of the on-going biological survey and monitoring program, and the research and development programs dealing with management of the biodiversity values in-situ, and ensure that communities wishing to be involved in management, research and monitoring have access to this database.

Actions underway include

- Government continues to expand the conservation estate to achieve a comprehensive, adequate and representative conservation reserve system, including 30 new National Parks in the old growth forest areas.
- Work is being undertaken with pastoralists (see Box 28, *Sustainable Rangeland Management*) to transform management of pastoral leases towards sustainability, including setting aside areas to protect biodiversity values.
- Private biodiversity conservation reserves are being created through projects like Land for Wildlife and Bush Brokers and through support for the Australian Nature Conservancy.
- The community and volunteers are involved in biodiversity management (see Box 19).
- Botanic Gardens and Parks Authority are leaders in the field of rare plant conservation.

In short cont'd...

- Threatened species research and management has brought back 3 animal species from the edge of extinction.
- A system of marine parks and fish habitat protection areas has been established to protect marine environments.

Proposed actions

2.6 Reaffirm Western Australia's commitment to global treaties on biodiversity and the National Strategy for the Conservation of Biological Diversity and establish a long-term monitoring and reporting program to demonstrate that the State is fulfilling its global biodiversity conservation obligations.

2.7 Introduce a new Biodiversity Conservation Act for Western Australia supported by a Biodiversity Conservation Strategy that outlines reserve requirements and links between them.

2.8 Nominate the Cape Range-Ningaloo area for inscription on the World Heritage List in recognition of its universal natural and cultural heritage values and intactness.

2.9 Facilitate nature-based recreation and tourism and Western Australia's 'sense of place' including through the marketing of the state's special biodiversity status.

2.10 Establish a plan for a Biodiversity Research Consortium bringing together the research and databasing capacity of the Department of Conservation and Land Management that includes the Western Australian Herbarium, the Western Australian Museum, and the Botanic Gardens and Parks Authority and to improve opportunities for synergies. Biodiversity conservation research programs within the consortium partner organisations should continue to receive strong support.

2.11 Plan a major science-education facility that can assist in the education of the community on Western Australia's biodiversity and its foundation in geodiversity (Biosphere West Project).

2.12 Create a State Bioprospecting Policy for ensuring native plant based industries are developed sustainably and with benefits accruing to the State.

2.13 Complete the Biological Survey of Western Australia by 2015.

2.14 Continue to support the national program to manage marine pest incursions into Western Australia and limit the spread of existing pests.

Indicators and targets

- The extent to which there is a comprehensive, adequate and representative conservation reserve system in place.
- Management of the forest and woodland estate vested in the Conservation Commission continues to meet standards required for international accreditation for ecologically sustainable forest management.
- Hectares of private conservation estate set aside.
- The extent to which the proposed environmental database is accessed by managers, planners and decision-makers at all levels of government and within the community, including within the local natural resource management regional and local organisations.
- Number of internationally accredited nature-based tourism projects and places.
- Number of threatened species and ecological communities brought back from the edge of extinction.

In short cont'd...

Global opportunities

The biodiversity conservation efforts in Western Australia are already contributing to global conservation efforts. This can be expanded substantially through improved marketing and through aid programs, and should include extension of the biodiversity conservation survey and monitoring and research and development programs to countries throughout the Asia-Pacific region.

Further information

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Department of Conservation and Land Management, <http://www.calm.wa.gov.au>

The Wilderness Society Wild Country Program and GondwanaLink, <http://www.wilderness.org.au/projects/WildCountry/gondwana.html>

> RESPONDING TO GREENHOUSE AND CLIMATE CHANGE

A comprehensive Greenhouse Strategy is being developed to address the issues of greenhouse emissions, adaptation, sequestration and new industries.

It would be naïve to ask governments to put their economic interests aside. I hope, however, that a better appreciation of the costs of inaction and the economic benefits of innovation in technologies and lifestyles will generate a more balanced economic vision.

Michael Zammit Cutajar, Retiring Executive Secretary of the UNFCCC, January 30, 2002

The evidence is overwhelming; human activity has interrupted the global carbon cycle and is beginning to have a profound impact on the Earth's climate.

Over the past 25 years, the South West of Western Australia has experienced a 50% reduction in rainfall run off. This is at least partly due to global climate change. We must now adapt to climate change and work to achieve a global reduction in greenhouse gas emissions.

In 1992, the World agreed to stabilize the concentration of greenhouse gases in the atmosphere through the United Nations Framework Convention on Climate Change (UNFCCC). Achieving this goal will require a 60-70% reduction in global greenhouse gas emissions.

The Kyoto Protocol, which was agreed in 1997, is the first step toward implementing the UNFCCC. The Kyoto Protocol establishes limits on Greenhouse gas emissions that challenge Western Australia's energy intensive society and economy. We must anticipate future greenhouse gas emission limits before they are applied globally in coming decades. The economy is moving inevitably towards reduced carbon intensity.

The changes that are required to address climate change can offer an opportunity for innovation and economic development. If we are able to use reductions in greenhouse emissions as a driver for economic modernization, efficiency and innovation then we can create a strong economic future for Western Australia while making a fair contribution to reducing global greenhouse gas concentrations.

Greenhouse has become perhaps the pre-eminent global sustainability issue. If the climate is changing due to human activity then how can we be looking after the future from an economic, social or environmental perspective? All of the sustainability principles are undermined by climate change.

The world is rapidly moving towards a consensus of action on greenhouse matters and a new economy is emerging where 'early movers' in greenhouse can begin to find opportunities for new technology and new services. The Kyoto Protocol is likely to be approved by a global majority and come into practice. Even those countries not signing are committed to shifting their economy towards less carbon intensive production, e.g. Australia.

The increasing requirement to sequester carbon may provide Western Australia with significant opportunities. Western Australia has all the requirements:

•   substantial land that was cleared in 1990 and can be revegetated before 2010-12

•   satellite photography and scientific analyses that enable verifiable calculations to be made of the potential carbon dioxide that would be sequestered

•   carbon rights legislation that enables a clear, legal process to be established.

However a Federal Government system consistent with global standards will be required to truly encourage this process.

The Western Australian Government is committed to meet the challenges of climate change. A Greenhouse Strategy is being prepared by the Western

Australian Greenhouse Taskforce to position Western Australia so that it can contribute to the successful reduction in greenhouse emissions while securing the future of our communities and economy. The key ideas below are consistent with that strategy and with other parts of the State Sustainability Strategy that are greenhouse-oriented, though that is not their focus. These will be expanded and updated in the final State Sustainability Strategy when the Greenhouse Strategy has been completed.

The policies are developed to enable proper accounting of greenhouse gases and carbon sequestration in the economy, to facilitate moves towards a less carbon intensive economy, to enable the global process of carbon trading and sequestration to occur in Western Australia, to create adaptation strategies for the climate change, and to create educational processes that enable the community to be informed and act on the issue.

Throughout the draft Strategy a range of other proposed initiatives related to industry, energy, buildings, transport, water, planning and agriculture will lead to reduced greenhouse emissions.

In short...

Vision

Climate change stabilises through concerted global action including reduced emissions, new technology, new ways of living, substantial revegetation and stabilised population growth. Western Australia contributes significantly to this process.

Objectives

- To participate in the new global opportunities arising from greenhouse related initiatives.

Actions underway include

- A State Greenhouse Strategy is being developed building upon previous work by government such as the Western Australian Greenhouse Council.
- Government has established a Sustainable Energy Development Office.
- Carbon rights legislation is underway.
- Government has also required government agencies to reduce greenhouse emissions by reducing their energy consumption by 12% between 2001-02 and 2006-07 through the Energy Smart Government Program.
- Western Power has begun to achieve significant reductions in carbon intensity due to more efficient power stations and greater use of gas. Decisions made will reduce carbon intensity from 0.95 to 0.80 tonnes CO_2 per MWh between 1999-2000 and 2006-07, ie a 16% reduction.
- Through the Strategic Environmental Assessment of the Power Procurement Process, the government has ensured that greenhouse is a significant factor in future power plant decisions.

Proposed actions

2.15 Establish a voluntary program of Greenhouse Offsets to assist large development projects to reduce greenhouse gas emissions by investing in energy efficiency, renewable energy, carbon sequestration or other accredited projects in Western Australia.

2.16 Continue to require companies involved in major projects assessed by the Environmental Protection Authority, to minimise and report on greenhouse emissions.

2.17 Facilitate a carbon sequestration facility through the Forest Products Commission to exploit the new market of carbon credits from the new carbon rights legislation.

In short cont'd...

2.18 Investigate the potential for reducing greenhouse gas emissions for the government vehicle fleet and the electric train system.

2.19 Maintain the commitment to ensuring that greenhouse is a significant factor in power decisions.

2.20 Provide mechanisms in the electricity market structure for encouraging renewable energy and distributed generation, which could include providing incentives to reduce line losses and providing priority dispatch for renewable energy in any trading market.

2.21 Establish an Adaptation Strategy for Climate Change with the Department of Conservation and Land Management, CSIRO Healthy Country and other relevant agencies.

2.22 Establish a carbon accounting system in accord with national and international systems to enable better understanding of greenhouse across government and the potential for various policy options.

2.23 Create greenhouse accreditation for carbon accounting for carbon rights.

Indicators and targets

Indicators and targets for greenhouse will be established as part of the Greenhouse Strategy. Preliminary indicators include:

• Reduced greenhouse intensity of the economy.

• Growing jobs in greenhouse related industries.

• Regional adaptation strategies adopted for climate change.

Global opportunities

There are many global opportunities arising from the greenhouse effect. There is a rapidly growing market for Western Australian gas (as evidenced by the recent contract with China for Liquid Natural Gas) as the world seeks to find less carbon intensive energy futures. There are many opportunities in Western Australia's rural areas for revegetation and reforestation through the global processes of carbon trading. There are also opportunities for Western Australian innovations in greenhouse related technologies, for example, small-scale biomass power as is being developed through the Oil Mallee project at Narrogin or wind power systems like Albany; and greenhouse related services, for example, construction of new rail systems, or climate adaptation strategies.

Further reading

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Australian Greenhouse Office
<http://www.greenhouse.gov.au/>

Indian Ocean Climate Initiative
<http://www.ioci.commerce.wa.gov.au/>

Commonwealth Scientific and Industrial Research Organisation
<http://www.csiro.au/>

> OIL VULNERABILITY, THE GAS TRANSITION AND THE HYDROGEN ECONOMY

One of the most difficult issues facing the world is the transition away from fossil fuels that have been the basis of industrial economies for several hundred years. In particular oil has been the basis of most economic growth in the past 50 to 80 years as the world has become very mobile.

Transport's current dependence on cheap oil supplies is not a sustainable activity. Estimates of the life of cheap oil supplies range from 3 to 50 years however the sooner we start the transition to a sustainable system the easier it will be.

Royal Automobile Club of Western Australia

Since 1995 Australia has been consuming oil and condensate at three times the rate of discovery. Australia should urgently shift to natural gas based fuels to replace oil based petroleum products, and develop other alternatives like hydrogen and ceramic fuel cells, especially for transport.

Brian Fleay

Since the first oil crisis in 1972 there has been increasing awareness that oil vulnerability is an issue of concern. The concentration of oil reserves in the Middle East means that there is a distinct possibility of political control of oil prices and oil availability. Apart from this the world is using oil at a much faster rate than it is being found–four barrels are used for every one found (some estimates suggest this could be as high as nine). Added to this are the problems of greenhouse emissions from oil use and the car dependence in cities.

Widespread awareness of this problem has grown since September 11 and it was the basis of several key industry submissions to the draft Strategy. There is just one week's supply of petrol in Western Australia for emergency purposes and in the medium term the oil and gas industry is also suggesting a major global oil crisis could occur (see Box 21).

Figure 4 outlines the problem and this is explored in some detail by Bruce Robinson's background paper. Adam Hawke's background paper looks at medium term technological options (see Box 21) and Lisa Garrity's background paper examines how we can prepare ourselves for the long term future Hydrogen Economy.

Figure 4 Oil Vulnerability (existing and projected production)
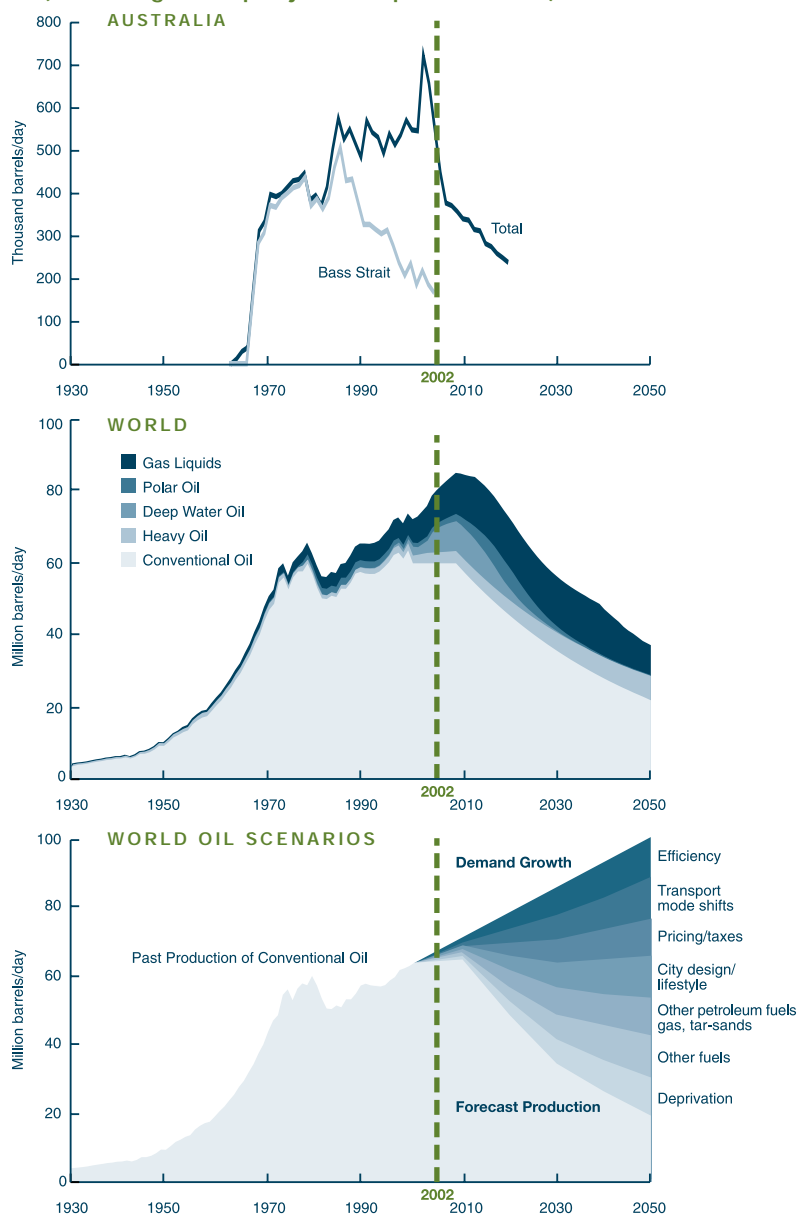
Source: See B.Robinson Background Paper,
'Global Oil Vulnerability and the Australian Situation'.

BOX 21 THE TRANSITION TO SUSTAINABLE TRANSPORT FUELS AND TECHNOLOGY[16]

As oil supply becomes less certain and its use less environmentally acceptable, governments worldwide are implementing strategies that introduce tough emissions standards, encourage responsibility for pollution and greenhouse gases, and foster sustainable transport industry upstream and downstream.

Australia's oil vulnerability in particular is highlighted by the fact that it faces a $7.6 billion deficit on trade in liquid hydrocarbons by 2010 from a surplus of $1.2 billion in 2000. Given Western Australia's major natural gas resources and strong public support for protecting the environment, the state is well placed to play a major role in meeting this challenge. There is a global transition to the use of gas for greenhouse reasons as well as economic and air quality reasons.

The global pool of transport technology is rapidly progressing and there are no obvious benefits to any one technology, as such it is not possible to second-guess which technology combination will eventually provide the solution. Government must therefore facilitate the transition to lower emissions fuels and vehicle technology without picking winners. It needs to be part of trials and remove barriers to the rapid integration of new technology. Demonstration projects with LPG and CNG, biodiesel and hydrogen fuel cells, are all underway and need to be carefully monitored.

Western Australia is well placed to create economic opportunities from the global oil situation though we also have some constraints of concern. The opportunities come from:

- the globally significant gas resources in our North West
- the political and economic security for developing these resources into value added products like liquid fuels
- the opportunity to create biodiesel from waste animal fat and from canola
- oil refineries being able to process gas condensates and produce high quality fuel suitable for the future in engine technology
- the electric train system which enables local fuels to be used including renewable electricity, for transport
- the Hydrogen Fuel Cell Bus trial in which Perth is the only non-European participant, supported by the EEC.

The constraints are:

- Western Australia is a highly transport fuel intensive state due to its large distances
- the nature of Perth's development which has been highly car dependent
- the oil-intensive nature of Western Australian agriculture.

The state can show global leadership in all these areas and will establish a Taskforce to pursue the issues. The Taskforce will assess the global oil situation, examine Western Australia's liquid fuel situation in short and long term supply, assess how best to use Western Australia's gas in transport, how this can lead to a hydrogen economy and the implications for sustainable transport policy.

In short...

Vision

Oil based transport moves quickly to a combination of gas-based systems and more public transport, cycling and walking to head off oil vulnerability. Then hydrogen becomes the basis of our economy using fuel cells and hydrogen gas produced from renewable energy.

Objectives

- Assess the global oil vulnerability situation and position the state's options if oil restriction occurs.
- Consider how to optimise the state's gas reserves in order to ensure that the global gas transition is addressed sustainably and to the state's long term advantage.

In short cont'd...

- Facilitate Western Australia's involvement in the emerging Hydrogen Economy.
- Provide 'whole of government' perspectives on transport energy sustainability issues that can enable innovation and leadership to occur.

Actions underway include

- An emergency fuel storage plan has been prepared.
- The Ministerial Council on Energy has a Strategic Energy Supply and Security Working Group.
- 25% of vehicle fleet is being converted to LPG.
- A hydrogen fuel cell bus trial is being conducted in Perth (the only non-European city participating in the EEC based trial).
- Local firms, such as Orbital Engine Corporation, are making global contributions to fuel efficiency (see Box 18 in Population, Development and Environmental Technology).
- A Sustainable Transport Energy for Perth program is being established in the Department of Planning and Infrastructure.

Proposed actions

2.24 Establish a Taskforce to examine issues to do with oil vulnerability, the gas transition and the Hydrogen economy.

Indicators and targets

- Proportion of middle Eastern oil used in Western Australia.
- Amount of gas and biodiesel used in the transport system.

Global opportunities

The oil problem is Western Australia's golden opportunity to establish global leadership in how to move towards the better use of gas in transport and to help lead the world towards a hydrogen economy. Economic opportunities in this area of sustainability abound.

Further information

Robinson, B 2002, *Global Oil Vulnerability: the Australian Situation*, sustainability background paper, Draft State Sustainability Strategy CD-ROM, Department of the Premier and Cabinet, Perth.

Hawkes, A 2002, *Evolution towards a Sustainable Transport Energy Source*, sustainability background paper, Draft State Sustainability Strategy CD-ROM, Department of the Premier and Cabinet, Perth.

Garrity, L 2002, *The Hydrogen Economy*, sustainability background paper, Draft State Sustainability Strategy CD-ROM, Department of the Premier and Cabinet, Perth.

Combes, D 2002, *Gas as a Transition Fuel: Western Australia's Natural Alternative, sustainability case study*, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/gasastranstion/gasastransition.htm>

Garrity, L 2002, *Hydrogen Fuel Cell Buses: The Future for Sustainable Transportation in Western Australia and Around the World*, sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/Hydrogen%20Fuel%20Buses/Hydrogen%20Fuel%20Cell%20Buses.htm>

Passey, R 2002, *Biodiesel: A Fuel for the Future*, sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/biodiesel/biodiesel.htm>

5 Sustainable use of natural resources

Vision for Western Australia

Western Australia's vast landscape and seascape, intricate web of biodiversity and other natural resources are managed and used sustainably for the common good and the community is involved in management and planning processes that are transparent and visionary.

Goal

Value and protect our environment and ensure the sustainable use and management of natural resources.

Priority areas for action

> SUSTAINABLE USE OF NATURAL RESOURCES

Much of Western Australian's wealth and sense of identity comes from the use of natural resources. Agriculture, forestry, fishing and the production of minerals and petroleum all provide employment, development opportunities and wealth. Tourism is also a significant contributor to the economy and employment and relies heavily on Western Australia's natural assets.

Much activity is occurring to identify the challenges to sustainability for these industries, and how they can become more sustainable. For example, the five natural resource management regional organisations in the South West have each developed regional natural resource management strategies. These strategies will become increasingly important determinants for the application of Commonwealth and State Government funding through the Natural Heritage Trust and the National Action Plan for Salinity and Water Quality.

Western Australia is the biggest sub-national state in the world with a population of under two million people. By way of comparison, it is equivalent in size to the whole of Western Europe with a population in excess of 200 million people. The sheer size of Western Australia also provides certain unique challenges to the way we use natural resources sustainably and can be considered in biogeographic regions. For this reason, separate sections consider aquatic systems, the coastal and marine environments and the rangelands.

Western Australia's 20,000 km coastline is largely undeveloped and relatively pristine. Some areas of the coast are developing rapidly and in need of careful management while others are under considerable threat of cumulative impact or have become degraded or irreversibly damaged and require more urgent or remedial action. Western Australia's marine and inland waters are vitally important natural assets that are used for many and sometimes competing uses. While the marine environment remains relatively untouched, the same cannot be said for our inland waters, which are heavily impacted by surrounding land use and management.

The rangelands are similarly vast, occupying about 90% of the total area of the State. Of this area, about 40% is under pastoral lease. Much change has occurred in the rangelands in recent years, with traditional pastoralism existing alongside traditional use by Aboriginal people, land managed for conservation purposes, tourism, mining and horticulture.

The social challenge

Until recently the focus of effort in natural resource management has largely been on integrating biophysical sciences and economics. Western Australia has been at the forefront of this effort in fisheries, agriculture, mining and forestry as well as in the management of water resources such as estuaries, rivers, wetlands and ground water. The more recent challenge for natural resource management and for sustainability generally is how to better incorporate community values–an important aspect of the social dimension of sustainability.

The importance of incorporating community values into natural resource management is perhaps best exemplified by the long-running debate on the management of native hardwood forests in Western Australia. Previous government attempts to determine appropriate management regimes failed to incorporate the groundswell of deeper community responses to the forest as a recreational resource and as an ecosystem that needed to be retained for its biodiversity and intrinsic values. In other words, the social dimension of sustainability, which included ethical considerations about the inherent environmental character of an area, had not been adequately reflected in forest management plans. The government's Old Growth Forest Plan and the recently released draft Forest Management Plan represents a major step in incorporating community values, as well as scientific information and economic modelling, into forest planning and management.

Similarly the Department of Fisheries has recently released the *Policy for the Implementation of Ecologically Sustainable Development for Fisheries and Aquaculture in Western Australia*. The policy acknowledges the need to expand on the social and economic components of sustainability, particularly as this applies to allocation issues.

Agriculture and pastoralism have contributed to (and been impacted by) land degradation issues as well as declining commodity prices for many years. While the landcare movement and various funding sources have supported a range of actions, land degradation continues. Recent work by the National Land and Water Resources Audit has made very apparent the importance of the social dimension in agriculture's future. In many parts of Australia, the demography of agriculture is changing so that social considerations such as the general aging of the farming population and rural population decline are increasingly important in the debate about sustainable agriculture.

Threats to water bodies and water quality such as salinity and eutrophication are closely related to land management. Research on the Hardy Inlet, Cockburn Sound and the Peel Harvey Estuary has provided an understanding of options to improve the management of inland and marine waters. Recent work has explicitly recognised the importance of community values in developing water management options. For example, the development of the Draft Environmental Protection Policy and Environmental Management Plan for Cockburn Sound reflects the community's values associated with the use of the sound for recreation and the provision of natural and cultural heritage as well as productive uses.

In addition, the Department of Environment, Water and Catchment Protection is allocating water based on biophysical research, economic analysis and community values reflecting the extent to which water should be allocated to the environment.

A strategy is proposed below to proactively support the incorporation of community values with biophysical research and economic analyses to enable sustainable natural resource management through improved use of statutory and non-statutory planning mechanisms.

Providing a statutory basis for natural resource management

There is already significant statutory power to support the sustainable management of natural resources in Western Australia and to incorporate community values in adopting these statutory processes. For example, the *Fish Resource Management Act 1994* provides for the ecologically sustainable management of fisheries through various mechanisms, including the creation of Fisheries Management Plans, while the Conservation and Land Management Act 1986 provides for the establishment of Forest Management Plans.

The current work of the five natural resource management regional organisations in developing regional natural resource management strategies offer a mechanism for identifying environmental values. They may also provide significant opportunities to more closely involve local government and use a variety of statutory mechanisms to support the sustainable use of natural resources at a regional scale, particularly land, water and biodiversity.

Under the National Action Plan for Salinity and Water Quality, the regional natural resource management strategies will need to be accredited by Commonwealth and state governments in order to receive funding through the National Action Plan and the Natural Heritage Trust. Part of the accreditation process requires setting clear environmental targets for action and an evaluation process.

At the same time, there is a growing awareness of the importance of involving local government more directly in natural resource management in Western Australia. A State-Local Government Working Group on Natural Resource Management has been established to examine possible areas of collaboration.

The Western Australian Government has indicated that local government should be more involved with the natural resource management regional organisations. Local government has significant statutory planning powers that could be used to support the implementation of the regional natural resource management strategies. In addition, local government is democratically elected and therefore representative of their regions. For these reasons, in the medium to longer term it may be desirable for regional councils of local government to have increased responsibility for planning for natural resource management. Further, it may also be desirable to give effect to the regional natural resource management strategies through various statutory mechanisms, such as Environmental Protection Policies and regional Statements of Planning Policy as set out in the implementation model in *Sustainability and governance*.

Environmental Protection Policies also offer a statutory process with potential application to natural resource management issues; they are especially relevant as the Environmental Protection Authority is taking an increasing role in evaluating natural resource management plans

The existing State-Local Government Working Group on Natural Resource Management could explore this model as part of the deliberations of the State-Local Government Sustainability Roundtable. This process should examine whether and how local government, including regional councils of local government, could support the institutionalisation of natural resource management, building on the work of natural resource management regional organisations in developing regional natural resource management strategies.

> SUSTAINABLE AGRICULTURE

Greening Australia (WA) believes that current agricultural land-use practices are far from sustainable. Consequently, we believe that it is necessary to formulate a new vision for our rural landscapes prior to examining the methods required to achieve this vision.

Greening Australia (WA)

Developing sustainable systems for farmers is pointless if they have no understanding of the processes involved and the adoption benefits. Hence the benefit in developing systems in partnership with farmers.

WA No-Tillage Farmers Association Inc.

Agriculture continues to be an important economic driver for Western Australia. The value of the state's agricultural exports for 2000-01 was estimated at $3,802 million, which represents 15% of the state's total export and 16% of national agricultural exports.

However, the 1998 Western Australian State of the Environment Report[17] identified that the economic contribution of agriculture has come at the great cost of widespread land degradation associated with unsustainable farming and grazing systems. More recently, the 2001 Australian State of the Environment Report[18] concluded that while strenuous attempts are being made to improve environmental, economic and social sustainability in many regions of established agricultural land use, serious doubts exist as to whether agricultural industries can finance the adoption of remedial and truly conservation-oriented farming systems. The Department of Agriculture[19] also notes that changing community goals and values since agriculture was established as an industry in Western Australia means that many agricultural practices currently do not meet societal expectations of sustainability.

There are many definitions and different understandings of sustainable agriculture. The Standing Committee on Agriculture and Resource Management[20] (now the Natural Resource Management Standing Committee) identified a number of guiding principles for sustainable agriculture:

- farm productivity is sustained or enhanced over the long term
- adverse impacts on the natural resource base of agricultural and associated ecosystems are ameliorated, minimised or avoided
- residues resulting from the use of chemicals in agriculture are minimised
- the net social benefit derived from agriculture is maximised
- farming systems are sufficiently flexible to manage risks associated with the vagaries of climate and markets.

The Department of Agriculture[21] proposes a definition of sustainable agriculture that attempts to recognise the contribution of agriculture to the sustainability of rural communities:

Ensuring profitable agricultural systems that conserve our environment whilst contributing to the economic and social well being of rural Western Australia.

[17] Government of Western Australia 1998, *Environment Western Australia 1998: State of the Environment Report*, Government of Western Australia.

[18] Hamblin, A 2001, *Land*, Australia State of the Environment Report 2001 (Theme Report), CSIRO Publishing on behalf of the Department of the Environment and Heritage, Canberra.

[19] Department of Agriculture 2002, *Submission to the State Sustainability Strategy*. Unpublished.

[20] Standing Committee on Agriculture and Resource Management 1993, *Sustainable Agriculture: Tracking the indicators for Australia and New Zealand*. Report No. 51.

[21] Department of Agriculture 2002, *Submission to the State Sustainability Strategy*.

The significant environmental impacts of agriculture–such as salinity and rangeland degradation arising from unsustainable practices–coupled with declining commodity prices and increased cost of production together with diminishing rural populations all indicate that there are very real and significant challenges to achieving sustainable agriculture in Western Australia.

Primary producers, community organizations and government agencies are recognising the significant challenge that sustainable agriculture presents and much is being done to determine how best to meet the considerable challenges that exist. For example, the widespread adoption of minimum tillage has had significant benefits in reducing erosion and runoff.

The State Sustainability Strategy will not attempt to address challenges to sustainable agriculture individually–many government and community programs are already attempting this. It will, however, propose strategies to address the most significant challenges that agriculture will face in the near future, and recommend actions which can be taken to seek out the opportunities that these challenges present and the role of government in addressing these.

The Department of Agriculture's submission provides a useful overview of the existing challenges to sustainable agriculture in Western Australia by considering the trends impacting on vibrant rural communities, profitable agricultural systems and conservation of the environment over the last 25 years as well as future challenges and emerging trends. These are summarised in Table 4 below.

Table 4. Trends influencing sustainable agriculture in Western Australia.

Vibrant rural communities	Profitable agricultural systems	Conservation of the environment
• Depopulation of rural areas	• Rationalisation of country towns into large regional centres	• Salinity
• Decreasing rural employment with increased mechanisation, comparatively low wages for the rural workforce and low diversity of job opportunities	• Weakening relationship between farm and food prices	• Loss of soil structure
	• Decreasing terms of trade	• Water-repellence of some soils
• Reduction of services in rural towns	• Deregulation of markets	• Waterlogging
• Increasing isolation for those remaining in rural communities	• Relative importance of agriculture in the nation's economy is declining	• Wind erosion
	• Introduction and spread of quality assurance schemes	• Traffic hard-pans
		• Deterioration in remnant vegetation
		• Destruction of habitat
		• Nutrient run-off causing pollution problems

However, while there is considerable awareness of the need to act on these issues, and the landcare movement has supported action in many areas, it is becoming increasingly obvious that the incremental change approach adopted has not resulted in the significant change at the scale necessary to achieve sustainable agriculture. There is an expectation that sustainable agriculture in the future would look very different from the agriculture of today.

As well as the challenging trends outlined in Table 4, a number of priority issues will impact on the future sustainability of agriculture in Western Australia. These are summarised below.

Biodiversity

Biodiversity and the conservation of natural areas as well as the preservation of important ecosystem services is very important for the maintenance of agricultural systems. Recent amendments to the *Environmental Protection Act 1986* significantly strengthen the protection of biodiversity in rural areas through regulating land clearing.

Much more effort will be needed to preserve biodiversity in some areas, particularly with the potential risk to existing reserves in the wheatbelt from salinity. New ideas are emerging, such as the development of bushland corridors linking reserves (the Wildcountry Gondwana Link project) or the Malleefowl Link concept, and the proposal to trial the EMU Plus process being successfully implemented in the rangelands.

Salinity and soil acidity

Salinity is considered to be the greatest environmental threat to Western Australia and impacts significantly on broadacre agriculture, biodiversity, water supplies, rural towns and infrastructure such as roads.

It is unlikely that the process of salinity can be reversed within current farming systems. In May 2001, the Minister for the Environment and Heritage appointed a Salinity Taskforce to review the existing salinity program and to recommend future directions. The Government responded to the Taskforce recommendations in July 2002 and indicated it would continue to protect high value public assets, invest in new technologies and industry development and provide incentives for on-ground work on private land. The government has also appointed a Natural Resource Management Council, indicated its support for natural resource management regional organisations and regional strategies and will provide increased attention to drainage, biodiversity and adjustment issues.

The removal of product from paddocks and leaching of nitrogenous fertilisers is increasing the acidity of many soils in agricultural regions. Acidity damages plant root structure, reduces plant water use and changes soil nutrient availability resulting in reduced productivity. Acidity is manageable; however, in the long term it could have a major impact on the productive potential of soils unless it is recognised as factor limiting production and appropriate management is widely adopted.

Water quality, availability and drainage

Water quality in the South West of Western Australia is declining due to processes such as salinity, sedimentation and eutrophication, and agriculture is a significant contributor to this decline.

In addition about 45% of Western Australia's water use is for agriculture and the future development of agriculture depends on continued access to water resources. Irrigation could come under increasing pressure from competing uses such as public water supply and industrial uses.

The use of drainage in rural areas is a significant issue and was highlighted in many submissions. The government's response to the Salinity Taskforce report acknowledges the important role that drainage may play in treating salinity in certain circumstances and many farmers have installed surface and sub-surface drainage. However, regional drainage schemes have not been developed and the difficult issue of where salty water should go is still largely unresolved. The government has indicated it will establish a high-level review of the regulatory framework for large-scale drainage, including planning, approval, maintenance and environmental impact and has funding to assist this process.

Greenhouse gas emissions and climate change

The agriculture sector is the second biggest contributor to greenhouse gas emissions through the emission of methane and nitrous oxide by livestock. The National Greenhouse Gas Inventory estimates that agriculture contributes approximately 27% of total national greenhouse emissions, although in Western Australia agriculture is estimated to contribute approximately 32%. Savanna and temperate grassland burning also generate emissions.

Climate change as a consequence of greenhouse gas emissions is expected to have a significant impact on the agricultural sector. Generally Western Australia is expected to become warmer and drier, particularly in the south of the state. This could mean a reduction in crop yields as a result of shorter growing season and less rainfall as well as impacting on pasture growth in the southern rangelands. Climate change could also reduce milk and meat production as a result of increased heat stress on livestock. Crops dependent on a 'chill factor' may also be impacted.

The challenge exists for agriculture to respond to increasing pressures to reduce greenhouse gas emissions; however, it is not yet clear that farmers will be able to make sizable emission reductions through changes in management practices.

Weeds, pests and diseases

Current agricultural systems are heavily reliant on the use of chemicals to control weeds, pests and disease. A number of pests and disease are already expressing tolerance to chemical control methods, threatening the productivity of agricultural systems. Resistance is expected to be a continuing problem. Exotic weeds, pests and diseases could establish themselves in Western Australia, threatening many existing agricultural systems as well as the natural environment.

Biotechnology

A main influence on broadacre farming in the future will be the impact of biotechnology. This may assist farm diversification, but it may also result in systems being increasingly crop (annual) dominant.

A number of submissions raised concerns about the risk associated with Genetically Modified Organisms in agriculture. The Western Australian Government is adopting a cautious approach to this matter. Small scale field trials are currently being undertaken to provide further information about these crops in Western Australian conditions, and consultation has been undertaken on the application of genetic modification free zones within Western Australia.

While the Federally-based Office of the Gene Technology Regulator will be responsible for ensuring issues of human safety and environmental protection, each state will be responsible for putting measures in place to safeguard its own produce and industries from a marketing perspective.

Maintaining vibrant agricultural communities

Current trends in agriculture, and other pressures in rural communities have resulted in the depopulation of rural areas. Technological advances and reduced profitability have also resulted in reduced employment opportunities in rural towns. To ensure sustainability a number of challenges facing rural communities will need to be addressed. In particular there is a tension between the desire to repopulate and revitalise rural communities when current economic conditions are encouraging larger farm businesses to grow and consolidate by buying out the smaller farmers.

As Barr and Cary[22] note:

> In many areas 'sustainable agriculture' will be as much about industry restructuring as about agricultural systems and agronomy. This raises larger questions about the acceptable rate of community change and the desirable form of rural communities.

Currently it appears that the economic and social components of sustainability are in direct opposition to each other under traditional farming systems. Consequently the challenge exists to develop rural industries that maintain or revitalise rural communities (see case study on the Oil Mallee Project) through new, diversified, low impact crops and farming systems with employment and environmental benefits.

Opportunities for sustainability

When all of the existing and possible future challenges to agriculture are considered, it is easy to be overwhelmed by the scale of the changes necessary to address these. As the Australian Natural Resource Atlas[23] suggests:

> The task of improving catchment health, particularly reducing the predicted future impacts of salinity, is a massive undertaking. A sustainable long-term solution implies significant and major changes in catchment landscapes. If we look at this task in short time frames, it is easy to become overwhelmed. History tells us that societies do not achieve such massive changes in landscape in short time frames without social disruption.

Further, the Australian Natural Resources Atlas concludes that land use change is always occurring, and in most cases this change is being driven by economic and social factors unrelated to natural resource management policy.

Attempts to pursue sustainable agriculture in Western Australia must promote all three dimensions simultaneously by developing and supporting forms of

[22] N Barr & J Cary, *Influencing Improved Natural Resource Management on Farms: A guide to understanding factors influencing the adoption of sustainable resource practices*, Bureau of Rural Sciences-Discussion Paper, Department of Agriculture, Fisheries and Forestry-Australia, Canberra, 2000, p. 4.

[23] Commonwealth of Australia 2001 http://audit.ea.gov.au/ANRA/People /docs/adjust_fact_sheet/future.html

agriculture that are profitable, environmentally beneficial and contribute positively to people living in rural areas by maintaining social capital. While fundamental changes will be necessary, this will only occur in the longer term.

A number of submissions called for the need to re-envision our agricultural and rural landscapes and use this as the basis for putting in place policies and processes to assist the transition to a more sustainable agriculture (see Box 22 Wildcountry: Gondwana Links). The new Natural Resource Management Council could assist with this, and advise government on the appropriate mechanisms to support sustainable agriculture.

BOX 22   WILDCOUNTRY: GONDWANA LINKS

The Nature Conservancy in the United States of America has developed a concept to provide links between major natural areas across agricultural regions by establishing corridors of native vegetation. This idea has been adopted by The Wilderness Society in Australia and simultaneously by a range of local conservation groups. Projects are beginning in three Australian states.

In Western Australia a partnership has been formed between Greening Australia, The Wilderness Society, Fitzgerald Biosphere Group, Friends of Fitzgerald, Australian Bush Heritage Fund and the Malleefowl Preservation Group. This project is called Gondwana Links. The partnership plans to try and link up the bushland east of Esperance, through the Fitzgerald National Park, the Stirling Range National Park, D'Entrecasteux National Park and Walpole Wilderness Area, through to the South West Forest and coast. The aim is to join up areas through the farming country between these parks through the purchase of private land, land trading of existing bush areas as well as encouraging covenanting and revegetation by local farmers.

This vision would result in a corridor of bush that could provide a continuous habitat link and an area to walk through that would cut across the entire State. Local farmers have already shown considerable interest in the project.

Opportunities that exist to support a transition to more sustainable agriculture include:

- Developing new sustainable agricultural industries that have well-developed and applied best management practices, (see Box 23) including low-input agriculture to meet future market needs.

- Further developing accreditation methodologies for agricultural systems that enable access to markets through verified compliance with production processes that ensure food safety/quality and/or sound environmental management.

- Significant research and development of new industries and innovations that are profitable and environmentally responsible, such as bio-fuels.

- Exploring new opportunities for agriculture that could be provided through the concept of valuing ecosystem services, for example along the lines of the Victorian Government's Bush Tendering system.

- Supporting the development of carbon sequestration opportunities, including commercial plantations, alley farming and landcare plantings to offset greenhouse gas emissions that could provide salinity benefits as well as large renewable energy resources for power generation. These plantings could be strategically developed to support programs like *Wildcountry* in creating important bush links across the landscape.

- Improving capacity in rural areas by establishing Regional Councils of Local Government as part of the State-Local Government Partnership Agreement.

BOX 23 ENVIRONMENTAL MANAGEMENT SYSTEMS AND ACCREDITATION FOR SUSTAINABLE AGRICULTURE

The Commonwealth and state governments have been working together to investigate the opportunities and possibilities associated with environmental management systems in agriculture. Similarly, the World Wildlife Fund for Nature and others have been investigating the place of accreditation for sustainable agricultural systems.

This work is in recognition of the international trends in the adoption of environmental management systems to other forms of primary production and the possible application to simultaneously assist with making agriculture more sustainable and benefiting agricultural producers.

The term 'Environmentally Responsible Agriculture' reflects the inter-generational equity and precautionary principles of sustainability. This is demonstrated through the adoption of management practices judged as sustainable through a transparent and scientifically rigorous process. The Department of Agriculture is developing the framework to describe processes and outputs for the achievement and demonstration of environmentally responsible agriculture. The framework will define the roles, responsibilities and communication strategies that underlie the processes and outputs and will be developed in consultation with relevant stakeholders from industry, community and government. The major processes and outputs described in the framework are outlined below:

- engagement of relevant producer and community groups

- environmental condition assessment using spatially defined zones

- natural resource management outcome targets

- industry performance standards linked to natural resource management outcome targets;

- best management practices underpinned by these standards which allow for profitable agriculture and address environmental outcomes

- sign-off and reporting to a third party on compliance with best management practices, probably the Environmental Protection Authority

- evaluating and reporting progress towards natural resource management outcome targets.

In short...

Vision

Agriculture achieves a new balance in Western Australia with production becoming more efficient and diverse while restoring ecological integrity in the landscape. Natural bush and regenerated land are linked in corridors across the state. New bio-industries based on local species are creating employment in rural towns.

Objectives

- Develop and identify agricultural systems designed to maintain or improve the condition of the State's natural resources.

- Facilitate the widespread adoption of best management practices that minimise environmental impact while improving profitability.

- Facilitate land-use changes within agriculture.

Actions underway include

- The Department of Agriculture and other state and Commonwealth government agencies such as the CSIRO and Land and Water Australia support or directly undertake considerable research, development and extension of sustainable agriculture techniques, such as best management practices for farmer groups and individuals including the development of best management practices for irrigators in the south west irrigation area.

- The Department of Agriculture and the Great Southern Development Commission are undertaking the Central South Coast Strategic Analysis to identify the constraints impeding adoption and implementation of change to more sustainable agricultural practices.

- The Western Australian Government has responded to the Salinity Taskforce's report and outlined its strategic priorities for salinity management in Western Australia.

In short cont'd...

- The Western Australian Government is amending the Environmental Protection Act to provide for improved management of land clearing.
- The Cooperative Research Centre for Plant Based Solutions to Dryland Salinity has been established.
- The University of Western Australia in collaboration with the State Government has established a Centre of Excellence in Natural Resources Management at its Albany campus
- Organizations like the Western Australian No-Tillage Farmers Association are researching more sustainable agricultural practices.
- In May 2001, the government announced an interim 5 year moratorium on the commercial production of GM Food crops to allow issues associated with market impacts, identity preservation and the feasibility, risks and benefits of establishing GM and GM-free zones to be fully debated in the community.

Proposed actions

3.1 Develop regional targets for sustainable resource use for incorporation into regional natural resource management plans.

3.2 Support diversification and landscape scale change towards sustainable land uses.

3.3 As part of the State-Local Government Partnership Agreement, establish regional councils and other processes that can meaningfully involve local government in issues of agricultural sustainability, particularly regional drainage, biodiversity conservation, regional revegetation programs, water quality and soil acidity. Local governments could then incorporate regional sustainability priorities into their local town planning schemes.

3.4 Continue to develop the government's policy on GM Food crops and the preparation of state gene technology legislation in consultation with the community.

3.5 Encourage the development of an aquaculture industry using saline waters to utilise land and waterways affected by salinity.

3.6 Improve the coordination of fox and feral animal control programs in regions to focus on core areas of regeneration and conservation where at-risk wildlife can be protected. The involvement of local government and farmers can be coordinated through the State-Local Government Partnership Agreement.

3.7 Develop with industry participation, standards and best practices for agricultural systems at regional and enterprise scale to provide the basis for accreditation of sustainable agriculture practices and to support regulatory processes.

3.8 Investigate economic incentives and innovative instruments such as biodiversity offsets, integrated ecosystem services trading, tax incentives and environmental stewardship rebates as well as land purchase, as drivers of land use change towards more sustainable use.

3.9 Investigate the application of the EMU Plus process developed in the rangelands as a means of empowering farmers and catchment groups, building capacity, facilitating change and leveraging private investment towards sustainable agriculture.

Indicators and targets

Most indicators to track progress towards agricultural sustainability are still undergoing development and testing.

Examples include:

- percentage of agricultural enterprises with positive farm business profit
- annual rates of return of agricultural enterprises

In short cont'd...

- adoption of best management practices
- extent and quality of rural and regional infrastructure
- land manager capability and capacity to change
- percentage of agricultural and nearby land with deep-rooted perennial vegetation
- condition and extent of native vegetation within individual subcatchments
- extent and changes of dryland salinity
- extent and quality of nutrient run-off into waterways.

Global opportunities

Many of the issues affecting agriculture in Western Australia, such as salinity, soil acidity, the impact of the climate change and the need to reduce greenhouse emissions, relate to sustainability in some way. Western Australians have participated in numerous agricultural development aid projects and will continue to contribute positively to resolving agricultural sustainability challenges in other countries. The more that Western Australia participates in this process the more globally relevant experience the state will gain. This will benefit farmers, consultants, industry groups and government agencies.

Further information

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> SUSTAINABLE FISHERIES AND AQUACULTURE

Fisheries management and sustainability is one of the good news stories in Western Australia. This is due to a powerful regulatory system and technology and resources for monitoring and reporting. The Western Australian Government has adopted a policy on the ecologically sustainable management of fisheries that is a world first.

> *The achievement of ecosystem-based management is hampered by the absence of an overarching, bio-regional, marine planning system and the lack of integration between the implementation of the marine reserve system ... fisheries management and the Commonwealth's Oceans Policy.*
>
> Environmental Alliance

> *The WA Rock Lobster industry is the world's first fishery to receive Marine Stewardship Council certification.*
>
> Worldwide Fund for Nature

> *The rock lobster industry is global best practice in many ways, its management techniques should be translated to other fisheries, including aquaculture.*
>
> Australian Corporate Citizenship Alliance

Commercial fisheries directly account for $750 million of Western Australia's income per annum, of which over $700 million comes from exports. Additionally, an estimated 600,000 Western Australians contribute a further $500 million in annual economic activity from recreational fishing and aquatic eco-tourism. These exports represent about 30% of the national total, making Western Australia the leading state in terms of fisheries. In some regional towns in the Gascoyne and Kimberly regions, fisheries activity provides the main form of employment.

A key feature of our coastal waters is the diversity of fishes; these support well developed commercial and recreational fisheries. Within Western Australia there are 43 managed commercial fisheries, six recreational fisheries and a number of emerging aquaculture industries. These fisheries are mainly coastal and as such have been developed under conditions of low productivity compared to western shores of the other continents in the southern hemisphere.

Many of the target species are demersal and rely on specific habitats, for example coral reefs, mangroves or 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. Fish Habitat Protection Areas are being established as an integral part of fisheries management plans and strategies.

The *State of the Fisheries Report 2000-2001*[24] reports comprehensively on the status of Western Australian fish stocks, associated fishing activities and aquaculture development as well as the associated impacts of these industries. The report indicates that the majority of the fish stocks are in a healthy condition and, although fully exploited, are producing catches at sustainable levels. The report notes that the exception is the southern pilchard stocks which suffered an attack from an exotic virus in 1998-99 and is now showing signs of recovery, assisted by low or zero quotas for the 2000 season.

Overexploitation of our natural biological resources can compromise sustainability. The sustainability of fish stocks and conservation of their habitats are desired government outcomes reflected in the *Fish Resources Management Act 1994*. The objects of this Act are consistent with sustainability objectives and guiding principles. In addition, Commonwealth Government legislation now requires that all export fisheries undergo an assessment against guidelines for sustainability.

[24] Fisheries Western Australia 2001. *State of the Fisheries Report 2000-2001*, Department of Fisheries, Perth.

Box 24 describes the application of sustainability to the Western Rock Lobster fishery, Western Australia's main export fishery.

BOX 24   ACCREDITATION FOR SUSTAINABLE FISHERIES AND THE WESTERN ROCK LOBSTER FISHERY

The Marine Stewardship Council is an independent global organization established to harness consumer purchasing power to generate change and promote environmentally responsible stewardship of the marine environment. The Council has been operating independently since 1999, thought it was first established in 1997 with international food company Unilever and the Worldwide Fund for Nature.

The Western Rock Lobster fishery is widely recognised as one of the best managed fisheries in the world and is Australia's most valuable single species fishery, at a value of $300 to $400 million annually. In March 2000, it became one of the first fisheries in the world to receive certification from the Marine Stewardship Council.

The foundation of this success was a management package introduced by the Department of Fisheries in 1993-94 to rebuild severely depleted breeding stock. In 1997-98 and 1999-2000, these management measures resulted in bumper catches and economic prosperity for commercial fishers and the State.

The Council's accreditation process is now also paving the way for the fishery to meet its requirements in demonstrating ecological sustainability to Environment Australia-a necessary requisite for all future export fisheries under the Commonwealth's *Environmental Protection and Biodiversity Conservation Act 2000*.

Approximately 12-25 fisheries worldwide are in various stages of assessment for accreditation by the Marine Stewardship Council. In 2002 the Council will establish an Asia-Pacific presence in Sydney that will allow it to better respond to the increasing demand for its accreditation services with considerable benefit to Australian fishing industries.

The government has recently committed $15 million to the development of a new fisheries research institute and associated community education initiatives to promote the sustainable use and management of marine resources.

The Department of Fisheries recently released the *Policy for the Implementation of Ecologically Sustainable Development for Fisheries and Aquaculture in Western Australia*[25]. This policy outlines how sustainability can be implemented within the fisheries sector. It focuses on environmental components of sustainability that are necessary to complete the assessments for export that Commonwealth Government legislation now requires. Future revisions of the policy will expand upon the social and economic components of sustainability and consider resource allocation issues.

The policy requires the preparation of sustainability assessments for each fishery, with the report being made available for public comment. Initial effort will be directed towards commercial fisheries, particularly those with a substantial export component.

The Department of Fisheries has identified the following key issues as requiring consideration in the future:

- an increased public requirement for accountability in respect to the maintenance of biodiversity and the ecologically sustainable use of the marine environment

- additional pressure placed on inshore fish stocks as a result of continuing population growth, coastal development, improved access and fishing technology, together with a growing recreational sector

- the development of high-quality recreational fisheries and low-impact eco-tourism experiences in some regions to meet increasing community interest and tourism potential

- direct involvement of the Commonwealth Government in the day-to-day management and planning of Western Australia's marine environment through the implementation of the Commonwealth's Oceans Policy initiative

- Indigenous fishing issues and the development of the law in respect to Native Title.

While the *State of the Fisheries* report indicates that the majority of commercial, recreational and acquaculture fisheries are being managed sustainably, there is concern about the status of the freshwater fish populations, particularly in the South West corner of the state. There are 14 species of

[25] Department of Fisheries 2002. *Policy for the Implementation of Ecologically Sustainability Development for Fisheries and Aquaculture within Western Australia.* Fisheries Management Paper No. 157, Perth.

freshwater fish in the South West of Western Australia and eight of these are endemic. Most are affected to some extent by habitat loss and five are considered potentially vulnerable because of this. In the South West, habitat degradation of fresh water systems has occurred because of salinity, the clearing of native vegetation, point source pollution, eutrophication, silting and the loss of riparian vegetation. Considerable effort needs to be directed to planning for the protection and management of freshwater fish.

There is also increasing pressure on the marine environment from a variety of users, including those in the aquaculture, fishing and tourism sectors together with a growing community desire for unfettered access to the marine environment and for conservation of important areas, habitats and species. For certain types of aquaculture, there is a shortage of high quality marine sites. Suitable sites tend to be in high use areas and close to major townsites. This often results in a high level of conflict between aquaculturalists and other users and the general community.

A number of state government agencies are involved with planning for the marine environment[26]:

- The Department of Fisheries prepares fish habitat protection areas plans, aquaculture plans, fisheries management plans, regional recreational fishing management plans and fisheries environmental management plans.

- The Department of Environment, Water and Catchment Protection prepares water management programs for estuaries and inlets.

- The Department of Minerals and Petroleum Production plans for resource development in State waters.

- The Department of Conservation and Land Management plans for marine nature reserves, marine parks and marine management areas.

There is currently no legislative framework for planning in the marine environment and the Department of Fisheries suggests that existing land use planning processes for coastal lands often do not integrate the use of the adjoining marine environment. This could lead to increased conflict in the absence of an integrative planning framework and a marine planning strategy is required. This strategy would complement state and regional land planning strategies.

Biodiversity conservation

The Marine Parks and Reserves Authority and the Department of Conservation and Land Management have responsibility for establishing and overseeing the management of marine parks and marine nature reserves under the Conservation and Land Management Act. The Conservation Commission of Western Australia and the Department of Conservation and Land Management have responsibility for the conservation of marine mammals such as dugong, seals, whales, and turtles.

Responsibility for management of populations of all other marine organisms is the responsibility of the Department of Fisheries under the Fish Resources Management Act. For the purposes of that Act, all those marine organisms are fish (this includes algae and marine invertebrates). Under the Fish Resources Management Act, the Minister for Fisheries may declare fish habitat protection areas for conservation of fish and marine ecosystems, for fish research and for appreciation of fish in their natural surroundings.

CONSULTATION DRAFT

In short...

Vision

Marine fisheries are sustainably managed in a way that ensures all species, including the non-commercial species, can survive and that people can enjoy the benefits of recreational activities in marine environments. Inland aquatic systems are managed so that no further declines in fish species occur.

Objectives

- To protect biodiversity and maintain essential ecological processes of the marine environment.
- To provide effective legal, institutional and economic frameworks for ecologically sustainable development of fisheries based on sound science.

Actions underway include

- The Department of Fisheries is compiling ecologically sustainable development assessment reports for commercial fisheries for export approval under the Commonwealth's Environment Protection and Biodiversity Conservation Act. Assessment of other sectors will follow.
- The government has committed $15 million to the establishment of a new fisheries research institute and associated community education initiatives to promote the sustainability of marine resources.
- Fish Habitat Protection Areas have been established at the Abrolhos Islands, Lancelin Lagoon and Cottesloe Reef.
- Six Marine Parks have been established, including the Ningaloo Marine Park, and one Marine Nature Reserve has been established at Hamelin Pool. The Marine Parks and Reserves Authority, with the support of the Department of Conservation and Land Management, is continuing to implement the recommendations of the Wilson Report on marine conservation
- Fisheries Environmental Management Reviews are being prepared on a region-by-region basis for all fisheries and fishing activity in Western Australia's marine waters out to the 200 nautical mile Exclusive Economic Zone boundary.
- Regional recreational fisheries management strategies are being developed for the Pilbara/Kimberley, Gascoyne, West Coast and South Coast. Plans for the Gascoyne and West Coast have been developed for community consultation and a management framework is expected to be finalised during 2002. Plans for the Pilbara/Kimberley and for the South Coast will follow.
- The Western Rock Lobster Fishery has been certified by the Marine Stewardship Council, an independent body that accredits fisheries on their environmental sustainability.
- Work is being undertaken to preserve freshwater fish stocks, including research, retaining breeding stocks, working with other relevant departments, and working with a freshwater fish reference group to identify issues associated with the conservation of native fish and establish priorities for management.
- The Great Southern Development Commission is undertaking work to assess the capacity of the local fishing industry to add value to the local fish resources, find markets and make a better return.

In short cont'd...

Proposed actions

3.10   Develop social and economic aspects of sutainability to integrate with environmental assessments completed on all Western Australian fisheries.

3.11   Develop a Marine Planning Strategy, including a cross-agency framework for integrated marine planning to ensure that marine and estuarine resources are adequately protected and managed across all habitats, within a bioregional framework. This framework should enable increased collaboration between catchment and land management agencies to manage resulting impacts on the marine environment and fisheries (see also *Contributing to global sustainability: Maintaining our biodiversity*).

3.12   Develop a long-term Inland Fish and Aquatic Ecosystem Strategy to rehabilitate freshwater ecosystems of the South West to conserve the biodiversity of the state's freshwater fish stocks.

3.13   Continue to implement the Wilson Report recommendations to establish additional marine parks and reserves system with provision for substantial and well-designed sanctuary zones, so that all marine bioregions have representative reserves by 2020.

3.14   Continue to establish fish habitat protection areas to complement the marine park and reserve system.

3.15   Prepare and implement regional recreational fisheries management strategies and regional fisheries environmental reviews and plans.

3.16   Continue targeted community education programs to promote fisheries and marine conservation based at the new fisheries research institute and the Aquarium of Western Australia.

Indicators and targets

- Number of fisheries that have successfully undergone sustainability assessments.
- Area of reserves for the conservation of marine biodiversity in each marine bioregion.

Global opportunities

Global fisheries are not managed sustainably, particularly in the developing world. There are many international projects that could utilise Western Australia's expertise in sustainable fisheries management.

Further information

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> SUSTAINABLE FORESTRY AND PLANTATIONS

The Western Australian Government has moved to end logging in old growth forests on public land and is proceeding to incorporate these areas into secure conservation reserves, including 30 new National Parks. As part of this process the government has put in place programs to restructure the timber industries to maintain social capital and regional development opportunities. This $136 million package is an essential part of how sustainability applies to forests.

Increasing global attention is being directed to our attempts to save forests, create habitat for rare and endangered species, manage feral animals and weeds. Can this become a new economic opportunity for the State? How can this help communities in rural areas?

Environmental Alliance

Western Australia's public forests and timber reserves are vested with the Conservation Commission of Western Australia. The Conservation Commission has prepared a new draft Forest Management Plan which is currently available for public comment. The government is committed to maintaining the ecological integrity of forests and woodlands, and will achieve this through the application of ecological sustainable forest management principles. This draft Plan proposes further change as ecologically sustainable forest management becomes institutionalised.

If there is acceptance by the public and within government of the proposals in the draft Plan, Western Australia will cement its position on the path to sustainability with respect of forest management.

The draft Forest Management Plan proposes substantial change in the manner in which decisions are made on levels of harvest from native forests. The draft Plan proposes a shift away from timber allocation based on the concept of Maximum Sustained Yield to incorporate some buffering and allowing room for error based on the precautionary principle. A second proposal is that the forests be managed according to the concept of adaptive management, with all that entails. Further research and monitoring to improve the knowledge base underpinning on-going management decisions will be required. The proposals are consistent with the precautionary principle.

Potentially the greatest single threat to biodiversity values in the South West, *Phytophthora cinnamomi*, sometimes referred to as jarrah dieback, is estimated to impact around 2,000 species of native plants and to cause major, permanent and irreversible changes to vegetation structure and habitat values for native animal species. Other species of *Phytophthora*, species of Almylaria, and a range of insect pests also cause significant damage.

Phytophthora species continue to pose a significant risk to the sustainability of forests in Western Australia. Disease management needs a strong commitment, such as rigorous controls on movement of vehicles and other vectors into likely uninfected areas, including those in State Forest and Timber Reserves, National Parks and Nature Reserves in the South West. A commitment to rehabilitation of areas degraded by *Phytophthora* is also required.

The forest plantation industry has an important role to play in the future sustainability of the State. Plantations have the potential to produce timber to substitute for the declining production from native forest. In addition, plantations can help deal with salinity and other land degradation issues and, if placed correctly with appropriate species can help restore biodiversity values, especially through linking existing conservation reserves and other remnant vegetation.

The Forest Products Commission has developed a Plantation Strategy for the South West which includes oil mallees, hardwoods, maritime pines and blue gums. The Small Tree Farm at Balingup has also been working to encourage productive revegetation of cleared farming land. They have developed a hybrid line of eucalypts that are suitable for sawlog production, referred to as 'fat eucalypts'.

The sandalwood industry has considerable potential to contribute to diversification in the rangelands. The opportunities that the sandalwood industry provides for diversification should be reviewed. Such a review would oversee the development of an integrated business and resource management plan that ensures the resource is managed on an ecologically sustainable basis, that maximises environmental, social, regional development benefits as well as providing adequate financial returns to the state. The review should also examine and report on mechanisms to support further development of sandalwood plantations in the agricultural region. The Forest Products Commission has commenced trials with pastoral leaseholders to reduce and where possible eliminate feral goats from sandalwood production areas.

As for other sustainability issues, there will be an ongoing need to continue to involve the community in the planning and decision-making in relation to forest management.

In short…

Vision

Western Australia's native hardwood forests are managed on an ecologically sustainable basis that includes a wide range of uses, all of which reflect the unique values of these forests. Regeneration of native forests is also a major focus, with strong community involvement. Production of sawlogs, pulpwood and other timber products from sustainably managed plantations is integrated with native forest use. Rural communities have adjusted to support the changed focus in use and management of native forests and the on-going development of plantations throughout the South West, including their uses in restoring degraded landscapes. Woodlands and sandalwood resources are also used and managed sustainably, with sandalwood production providing the basis for a new industry in the rangelands.

Objective

- Ensure that Western Australia's forests, woodlands and sandalwood resources are managed according to sustainability principles.

Actions underway include

- The Conservation Commission has prepared a Draft Forest Management Plan incorporating Ecologically Sustainable Forest Management Principles, which has been made available for public comment.
- The government has protected all old growth forests and has created thirty additional National Parks and reserves to expand the conservation estate in the forested South West.
- The Forest Products Commission has developed a Plantation Strategy for the South West.
- An agreement to develop a LVL plant from the Gnangara pine plantation creating over 100 jobs and improved ground water management possibilities.

Proposed actions

3.17 Continue to support restructuring of the timber industry, giving particular support to value-adding opportunities in the timber processing and wood working areas.

3.18 Promote the efficient use of all logs, development of high value-added timber utilisation, and harvesting rotations based on maintaining the full range of forest values including saw log production.

3.19 Actively support the Action Plan for Tree Farming in Western Australia for the further development of a plantation industry on previously cleared agricultural land within the guidelines being developed by the Western Australian Planning Commission to retain viable rural communities. Particular attention should be given to production of sawlogs as a substitute for the declining yield from native forests.

In short cont'd...

3.20 Continue to consult with communities over the final boundaries on the 30 new National Parks in old growth forests.

3.21 Review the sandalwood industry in Western Australia, the present and projected resource availability, the manner and pattern of exploitation of the resource, and the role that it might play in regional development and ecologically sustainable management of the rangelands. Develop a sandalwood management plan that is consistent with principles of Ecologically Sustainable Forest Management.

3.22 Seek to minimise the loss of natural values from State Forests and Timber Reserves and all other reserve categories within the South West as a consequence of the extraction of low value bulk commodities such as sand and gravel.

3.23 Create a comprehensive Dieback Strategy including how to:

- Establish and maintain a comprehensive database on the distribution of *Phytophthora* species throughout the South West, and use this to ensure that future timber harvesting operations and other activities do not lead to the spread of these pathogens.

- Develop and implement rehabilitation plans for selected diseases-affected areas.

- Ensure the Western Australian nursery industry follows best-practice hygiene procedures to eliminate *Phytophthora* species from all seedlings and propagating material.

- Work with relevant Commonwealth agencies to prevent the introduction of new plant diseases into Australia that could impact on the forests and forestry industry.

- Develop an education program for the general public, and private and public organisations whose activities involve use of land in dieback susceptible areas.

- Support the establishment of a Centre of Excellence for *Phytophthora* research into ecological impacts on key elements of the biota, methods of managing and counteracting impacts of diseases, and monitoring spread.

3.24 Continue to develop skills in production and marketing of fine timber products made from specialty native hardwoods.

3.25 Support accreditation of forestry and plantations as an important part of maintaining sustainable forest management in Western Australia.

Indicators and targets

All Western Australian public forests are subject to Forest Management Plans that are approved by the Minister for the Environment on the advice of the Environmental Protection Authority.

Global opportunities

The decision to stop the logging of old growth forests in the South West of Western Australia and a move towards sustainable forest management has attracted interest from around the world. When fully implemented, monitored and evaluated, this area of sustainability will be of considerable global value as the world's forests continue to decline at an alarming rate.

Further information

Forest Products Commission
<http://www.fpc.wa.gov.au>

Draft Forest Management Plan for Western Australia
<http://www.conservation.wa.gov.au>

> SUSTAINABLE MINING AND PETROLEUM PRODUCTION

Mining and petroleum production are important contributors to Western Australia's economy and are part of the state's rural landscape. In the past twenty years they have been at the cutting edge of developments in environmental science and management. It is accepted that assessment of resource projects on local environmental criteria is now well advanced but that the integration of social, economic and strategic issues needs more attention.

From a mining industry perspective, many of the practices of years gone by are no longer valid. There has been a gradual recognition that a healthy economic bottom line will only come if environmental and social goals are pursued in tandem. The growth of factors such as ethical investment, community expectations and human rights movements are driving significant change in the resources sector.

Rio Tinto

In Western Australia, the mineral and petroleum resources sector accounts for 25% of Gross State Product, 49% of investment, 71% of exports and 17% of direct and indirect employment. The Western Australian resources sector is 50% of Australia's total mineral resources production and accounts for 47% of the investment in mining nationally.

The expertise required to develop these resources is significant and, in Western Australia, the processes of exploration, development, processing and rehabilitation are world class. This expertise is now being exported to numerous countries with an estimated benefit to the national economy of $1 billion, with Western Australia gaining 60% of this benefit.

There are a number of key sustainability innovations that have been developed in the Western Australian resources sector, including land and water rehabilitation, eco-efficiency in mineral processing and, more recently, a range of social innovations, e.g. the training and employment of Aboriginal people. Four sustainability case studies and a background paper describe some of these innovations.

The international minerals sector has recently developed a position statement on sustainability issues across the sector in the lead up to the World Summit for Sustainable Development in Johannesburg. This major piece of work identified nine key challenges to the minerals sector, including issues of access to land and management of the environment as well as the extent to which the sector and the minerals it produces can contribute to broader social goals in society.

The project went on to identify an agenda for change based on a new vision of the minerals sector, and a program for supporting that change. The Australian minerals sector participated in this bigger project and produced a separate report that sits within the framework of *Breaking New Ground*. This report also identified some critical issues and proposes an agenda for action.

Action items include ensuring that decision-making process are open to public input and scrutiny, acknowledging that some areas are off-limits, and addressing better the potential social and environmental impacts of all aspects of the sector's activities. It is suggested that the State Sustainability Strategy could provide an avenue for this to occur through a partnership similar to that to be developed with local government.

The need for agreed principles of sustainability in operations is important for the public to recognise where net benefit considerations are occurring. It is also important for the public to see where regulations are being applied and the monitoring and reporting processes that are in place.

Some submissions to the State Sustainability Strategy suggested that Western Australia should move away from being an economy based so heavily on the resources sector.

The case studies on mining (see below) document how a number of companies have created long term futures by creative use of technology and innovative thinking. They have demonstrated that mining is a lot more than digging up the ground and are finding clever solutions to their problems. It is clear from these examples why the companies have chosen to use sustainability for the

framework they used for their innovation. And it is clear that Western Australia is at the global forefront in these applications of sustainability to mining. Box 25 below sets out how the HIsmelt process has created a long-term future for Pilbara iron ore.

BOX 25   HISMELT TECHNOLOGY: A GLOBAL INNOVATION FROM WESTERN AUSTRALIA

HIsmelt technology is a globally innovative technology breakthrough from Hamersley Iron developed in Kwinana. This technology has been researched and developed with funding from Hamersley Iron and the government over the past twenty years. The project is now being assessed by the Environmental Protection Authority for full-scale application at a company owned plant in the Kwinana industrial area along the coast south of Fremantle.

In terms of sustainability the technology is a breakthrough on several fronts. First, it enables vast areas of previously uneconomic phosphate-rich iron ore to become economic, giving the Pilbara region a much longer lifetime as a producer of quality iron ore. Second, it is a fundamental change to how iron is produced with significant potential to reduce energy and greenhouse gases.

The process combines a hot air blast system, ore pre-heater, vertical smelt reduction vessel to smelt a continuous ore/coal/flux feed into high purity iron ore without the use of coking ovens. The key innovation is the use of a reduction rather than an oxidation process, which greatly increases the range of suitable and economically viable ferrous feed stocks, due to its ability to separate impurities efficiently on a continuous basis. Phosphorous, which poisons a traditional blast furnace, is no longer a hindrance. After an additional sulphur removal stage, the end-result is a high-grade pig iron, which is highly sought after by steel manufacturers.

The design of the plant will also allow for the capture of heat energy produced in the smelting process that can then be used for energy production. This new efficiency is called a 'Factor-X gain (a term used in industrial ecology to denote ecologically beneficial efficiencies in a production process that are gained through producing multiple products where formerly there was only one). In this case, the dual outcomes of iron production and energy means a much-reduced greenhouse gas output as compared to the production of these two commodities independently. This is a precursor to the next wave of production technology and regulatory requirements, which will eventually result in the retirement of older, less greenhouse efficient, stand-alone energy plants.

The sustainability benefits of the HIsmelt process are many. Locally, the Perth area gains a new industry and a value added technology, while simultaneously reducing its greenhouse gas output per unit of production. Regionally, both the Perth metropolitan area and the Pilbara benefit through the extended life of an industry that is of vital importance to both in terms of employment and economic stability. The State of Western Australia also benefits in a similar manner. Nationally, technologies such as HIsmelt will be crucial to Australia's commitment to reduce greenhouse gases, as well as ensuring a role for this country in an emerging global market through the steady progression of agreements, such as the Kyoto Protocol.

On a global scale, licensing this technology will mean that steel production can be combined with energy production in many areas (such as China, which is both heavily coal dependent and a major steel manufacturer), merging the greenhouse emissions of the two industries into one. Finally, the energy and iron/steel industries benefit through a more secure future, steel and energy production efficiencies, reduced need for carbon offset trading, fewer emissions and a greater potential ore body to mine. Furthermore, this technology, through the expanded range of viable feedstocks will facilitate the eventual merger of the iron mining and iron recycling industries. This is a microcosm of a similar transition, which is expected to occur across the mining industry over the next 50 to 100 years. Through HIsmelt, Australia has the opportunity to be a leader in this development.

The State Sustainability Strategy recognises the need for greater diversity in the Western Australian economy and this is occurring quite rapidly in terms of employment. Indeed, resource development projects are often able to make a global contribution to sustainability through demonstrating best practice. The problem of over consumption of resources would not be assisted at all by stopping resources development. This can only be addressed by consumers and by eliminating processes that support over consumption, not those who extract the resources. Global processes to reduce consumption through eco-efficiency and lifestyle changes are underway but in the short to medium term there is growing demand for non-renewable resources.

Western Australia's major resource sector developments are associated with gas extraction off the north west coast. Some submissions suggested that these developments should not be supported. As outlined in *Contributing to global sustainability: Oil vulnerability, the gas transition and the hydrogen economy*, these developments are an important part of the global transition from oil and can assist in creating the hydrogen economy. These developments need to be linked directly into a full sustainability assessment so that we can create a more sustainable future. As outlined already these developments are potentially very

important to Western Australia's future and sustainability assessment should ensure net benefit and common good outcomes.

Over the past twenty years, the minerals and petroleum production sector has developed some sophisticated land management and rehabilitation techniques so that mined land can be returned to some form of production or conservation after mining. There have also been mining activities showing net environmental benefit, for example, where companies purchase pastoral leases to mine a small proportion and manage the majority of those leases for nature conservation.

The next challenge for this industry sector is to develop the social aspect of sustainability. This needs to go beyond philanthropy and shift to strategic investment by companies into projects and programs that can make a difference in the communities in which they operate.

The Aboriginal training programs within Hamersley Iron and BHP in the Pilbara are examples of this focus (see case study *Sustainability and iron ore in the Pilbara: a regional perspective*). After five years, many local Aboriginal people are employed in the mining industry and young Aboriginal people are supported to undertake tertiary and other further education. This innovation in training is becoming an industry standard providing a clear example of how major resource companies can achieve a level of Indigenous employment that is equivalent to the region's Indigenous population (see also *Sustainability and governance: Indigenous communities and sustainability*). The Aboriginal training programs are an innovation in social sustainability that has occurred with limited government involvement. It may be appropriate that government now promotes this initiative to extend the process to other regions.

Various submissions have suggested that there is a real need for government involvement in the social side of sustainability. For example, through sustainability assessment, the government could ensure that mining companies liaise with local Aboriginal communities, local pastoralists and shires. Most companies do this but this will become even more necessary in the future and more apparent through the sustainability assessment process.

In short...

Vision

The need for global resources reduces as sustainable consumption patterns emerge and this highlights the need to extract resources in ways that offer the most all round benefits. Non-renewable resources continue to be produced from Western Australia, as it remains the most sustainable option globally, with net benefits accruing to the state.

Objective

- Continue to ensure that minerals and petroleum production in Western Australia remains at world best practice and the industries help to establish the standard for sustainability.

Actions underway include

- Environmental impact assessment has helped establish environmental bottom lines for the minerals and petroleum production sector.
- The sustainability assessment process is beginning to demonstrate how the full triple bottom line can be incorporated into major projects (Gorgon assessment).
- The Centre of Excellence in Sustainable Mine Lakes has been funded.

Proposed actions

3.26 Work towards sustainability assessment of state significant projects using sustainability criteria (consistent with the Keating Review).

In short cont'd...

3.27 With key stakeholders, develop a set of agreed Sustainability Operating Principles for the Mining Sector, including consideration of the Mining Minerals and Sustainable Development Principles recently outlined through the Global Mining Initiative through a working group managed through the Department of Minerals and Petroleum Resources.

3.28 Foster local community involvement (particularly Aboriginal communities, pastoralists and local shires) as part of the sustainability assessment process.

3.29 Establish transparent processes to enable community awareness of the regulatory system for mining and minerals processing.

3.30 Work with industry on the development of voluntary accreditation for mining sustainability.

3.31 Provide financial support for the Cooperative Research Centre in Sustainable Minerals Processing and the Cooperative Research Centre in Greenhouse Gas Technologies, should they be successful in the Commonwealth CRC funding round.

Indicators and targets

- Number of minerals and petroleum projects with Sustainability Assessments and Sustainability Reporting.

Global opportunities

Western Australia is a world leader in mining and petroleum production, especially in advancing sustainability and mining. The recent global initiative called Minerals, Mining and Sustainable Development was heavily oriented to innovations occurring in Australia, especially in Western Australia. There are already numerous examples of where global opportunities in mining and sustainability have been taken by Western Australian consultants and companies. The opportunities in this area will continue to grow.

Further information

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> SUSTAINABLE TOURISM

Tourism has much potential to support the sustainable use of our natural resources. Western Australia's unique and highly diverse natural environment offers a different kind of tourism experience that people from around the world are wanting: subtle, low impact, more natural and cultural experiences.

Tourism (especially passive recreation) will play a major role in the battle for sustainability. Perhaps people will come to Australia to learn how to become more sustainable.

Lisa Clarke

Tourism contributes some $4.2 billion to Western Australia's economy, which accounts for about 4% of Gross State Product. In 1999-2000, over 590,000 international and 6.21 million domestic visitors travelled in Western Australia (the majority being Western Australian residents).

Significant opportunities exist in Western Australia to promote and encourage sustainable tourism. Research suggests that this is the fastest growing tourism market and the 'Touched by Nature' tourism marketing campaign is designed to promote Western Australia. Western Australia is recognised internationally for its biodiversity, wilderness areas and other special places. Places such as the Kimberleys, Ningaloo reef, the Shark Bay World Heritage Property and the forests of the South West have put Western Australia on the map as a tourism destination.

The unique and highly diverse natural environment offers a different kind of tourism experience that people from around the world are beginning to want-more subtle, low impact, more natural kinds of experiences. Consequently, nature based tourism accounts for nearly 30% of all domestic travellers in Australia. In 2000, 47% of all tourists visited a National Park. See Box 26 about Rottnest Island's work to become a sustainable tourism destination.

The projected substantial growth in nature based tourism will need to be managed in ways that contribute to biodiversity protection and the protection of natural assets. As the Western Australian Tourism Commission states:

> There is an opportunity to design and construct innovative, low impact tourism facilities, in a range of locations throughout the State, positioning Western Australia as a world leader in low impact-tourism development.

The Western Australian Government has committed to the creation of additional parks and reserves to protect Western Australia's biodiversity. Thirty new national parks were created from the decision to end old growth forest logging. This will enhance the state's ability to deliver sustainable tourism experiences and the management of parks and reserves will need to ensure that natural values are maintained.

Significant activity is already occurring in the accreditation of nature-based tourism. The Western Australian Tourism Commission supports three programs: The National Tourism Accreditation Program from the Tourism Council Western Australia; The Nature and Ecotourism Accreditation Program from the Ecotourism Association of Australia; and Green Globe 21.

The government can assist tourism professionalism and quality through increased involvement in national and international accreditation systems and these need to be expanded and promoted in Western Australia so people enjoying and using these natural places gain maximum value from the experience with minimal impact. There is an opportunity to promote these experiences regionally to support sustainable regional development.

The development of walk trails through Western Australia can also promote this kind of nature-based tourism. Already the Bibbulmun Track and the Cape-to-Cape Trail are attracting large numbers of walkers. There is a growing demand for small scale economic development associated with these trails such as bed and breakfast facilities (just as railways and roads have facilitated growth in the past). New trails can be built right across the state when the Gondwana Links project and the Malleefowl Corridors project are implemented

(see Box 22 in *Sustainable agriculture* and Box 20 in *Contributing to global sustainability: Protecting biodiversity*).

The government is committed to the active involvement of Aboriginal communities through co-management arrangements for parks and reserves. This also provides the opportunity to introduce interested visitors to appropriate sites and knowledge, while ensuring that Aboriginal interests are properly acknowledged and that any commercial advantage based on, or that any returns from Indigenous knowledge is kept with local custodians.

Additional opportunities exist to promote Western Australia as a place where people can become involved directly in research and management programs in parks and reserves as part of a genuine learning experience as demonstrated in the Landscape Expeditions concept.

BOX 26   ROTTNEST ISLAND: A MODEL FOR SUSTAINABILITY

Rottnest Island is a valued holiday destination by West Australians with around 500,000 visitors each year.

The Rottnest Island Authority's Strategic Plan has allured the Authority to formalise its commitment to sustainability. The Strategic Plan involves as a core goal that "Rottnest Island's environment and heritage are conserved and enhanced as a model of sustainability".

This is reflected in the Authority's vision: 'Rottnest: Forever Magic', meaning that the Authority will control and manage the Island in such a way that ensures its resources and experiences are available for future generations. Its mission is to provide holidays for Western Australians and other visitors while sustaining the Island's natural environment and unique heritage.

The Rottnest Island Authority is active in recycling and composting, in-situ treatment of wastewater, desalination plants and using some grey water for irrigation. In order tor educe the Island's dependence on the fossil fuels the Authority is trailing biodiesel for vehicles, solar lighting on toilet facilities, and has received public support for the installation of a wind turbine.

The key instruments for the management of visitor impact and behaviour are education through formal learning groups and self-directed exploration and investigation programs. Investments in providing classroom facilities, the museum and the Discovery Centre are viewed by the Authority as investments in the future management and use of the Island. Strategies aimed at the general visitor population include: guided tours with trained volunteers and self-guided tours; displays; signage, brochures; talks, story telling; school environmental education programs; and an environmental awareness course designed for teachers and proactive members of the public. Education of staff is also emphasised in ensuring sustainable use of resources and activities.

Due to the large number of visitors to Rottnest Island, this commitment to sustainability principles is being communicated throughout Australia and internationally.

Some future directions that Rottnest Island is exploring include:

The Greenhouse Challenge Program and the establishment of greenhouse emission target.

Green Globe 21 accreditation (a global authentication standard for sustainable management for tourism and travel destinations).

The continued implementation of a 20 year reforestation program; and rehabilitation of the Island's swamps to re-establish declining frog populations.

Not all tourism needs to be nature-based to be sustainable. There is obviously an important role for tourism in Western Australian settlements. For this to be successful there needs to be a strong 'sense of place' which permeates and defines the settlement. The social aspects of sustainability (which are defined further in the next two sections) are also important to tourism. Cultural tourism and being exposed to 'sand groper' life is a major part of the attraction for people coming to Western Australia.

There are a number of important recommendations in other sections about social sustainability which will be necessary for tourism's future. For example, most tourists use public transport and walk or cycle a lot, hence the provision for a good public transport system and pedestrian/bicycle facilities is part of the development of more sustainable tourism.

In short...

Vision

Tourism continues to grow in Western Australia but becomes more and more a tool for natural resource management, the repair and protection of the environment and the facilitation of social capital in communities, especially Indigenous communities.

Objective

Tourism activities are sustainable.

Actions underway include

- Various accreditation programs exist for nature-based tourism.
- The government has established in the Western Australian Tourism Commission a Sustainable Product Development Unit.

Proposed actions

3.32 Facilitate nature-based recreation and tourism and Western Australia's 'sense of place' including through the marketing of the state's special biodiversity status and cross state walk trails.

3.33 Develop cultural tourism opportunities through the Western Australian Tourism Commission's Sustainable Product Development Unit to integrate social aspects of sustainability, for example, Indigenous walking tours, cultural history experiences and arts events as well as 'sense of place' markers.

3.34 Support the expansion of existing sustainable tourism accreditation in Western Australia.

3.35 Support the application of appropriate accreditation to a local government area as a way of demonstrating area-wide tourism sustainability.

Indicators and targets

- Increasing number of accredited tourism ventures.

Global opportunities

The most rapid area of growth in tourism is nature-based tourism and ecotourism. Western Australia's special status as a marine and terrestrial biodiversity 'hot spot' is a significant global marketing opportunity. The development of 'sense of place' processes will also make Western Australian settlements more attractive to visitors.

Further information

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> PROTECTING AQUATIC SYSTEMS

There are many threats to our aquatic systems—wetlands, rivers and estuaries—and it is an enormous challenge to protect and enhance these precious assets.

From our perspective as a community group dedicated to the conservation of wetlands we would like to see some emphasis placed on the need to conserve biodiversity and water resources in the State Sustainability Strategy.

Wetlands Conservation Society

This section considers the sustainable use and management of rivers, estuaries and wetlands. The sustainability of our water supplies is addressed in *Sustainability and settlements: Our water future.*

Water is a highly valued resource within the community, not only for drinking, recreation and industrial uses, but also for the wide range of natural aquatic systems that occur within Western Australia. Western Australia's waterways, estuaries and wetlands are an integral part of our heritage and have important social and economic values including traditional and cultural use by Aboriginal people, as well as commercial fishing, recreation and leisure.

There are 208 major waterways in Western Australia, with a combined length of more than 25,000 km. Many of these waterways and associated catchments are degraded as a result of human activities. Water quality is generally declining across the state, with some waterways carrying high loads of nutrients, sediment, and organic matter, and in some cases toxic chemicals. A large number of rivers are also becoming increasingly saline.

Waterways also provide important ecological functions. They form important links between landforms and are home to a wide range of plants, animals, and micro-organisms. Permanent pools within a river system are an important refuge for fauna during prolonged dry seasons, and estuarine basins provide unique conditions for fresh and marine species. Often a riparian corridor is the only connection between remnant natural bush habitats.

A decrease in rainfall across the state since the 1970s is a significant threat to many river systems. Many systems and natural seeps have stopped flowing, resulting in significant impact on the ecology of these systems. The low rainfall trend appears to be continuing, and this along with human impacts and other pressures, is considered a significant threat to the integrity of many waterways in the state.

Estuaries are the receiving water bodies for catchments via river networks and their fates are intertwined. Environmental quality and human health are also closely related. The estuaries are highly impacted both from the population pressure in close proximity and by the highly degraded, generally 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 all of these estuaries urban development and habitat destruction are at least as important as contaminant discharge in affecting environmental health.

Most estuaries affected by agricultural runoff are deteriorating. In agricultural areas habitat destruction, land salinisation and water abstraction have reduced water quality over large areas. In some cases these effects are exacerbated by wastewater and mine discharges. The current pattern of use for many of our rivers and estuaries is clearly unsustainable in that the water quality and habitat value are both declining.

No statewide estuarine management framework currently exists. In the past a number of estuarine management approaches have been explored, most notably with Management Authorities across key estuaries at risk. This approach provided a framework for community involvement in decision-making and was one of the first of its kind in Australia, forming a foundation for the way much community decision-making is made today. Newer models of community decision-making have been developed for the Vasse-Wonnerup (Geocatch) and

Cockburn Sound (Cockburn Sound Management Council) which are proving effective. The Swan River Trust is the only actual estuarine management entity in Western Australia with planning and decision powers.

Significant loss and degradation of wetlands has also occurred over many years. On the Swan Coastal Plain 80% of wetlands have been lost or degraded since European settlement and this continues. A recent assessment of wetland loss in the Perth metropolitan area highlighted a significant rate of loss due to development impacts on conservation category wetlands that are without any form of legal protection. Over many other areas of the state there is limited knowledge of the full extent of wetland areas and condition to properly understand the loss that is likely to be occurring in those regions.

The Western Australian Government's *Wetlands Conservation Policy for Western Australia* provides a strategy for implementation that includes 62 action items and is overseen by the Wetlands Coordinating Committee made up of relevant government agencies and other stakeholders. The role of the committee is to coordinate the implementation of the policy and the activities of relevant agencies with respect to wetlands.

The ever-increasing pressure on our aquatic systems requires a commitment to change through a catchment focus, community participation and involvement in decision-making, and a shift in community values. The environmental values of our aquatic systems are also 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 in the North of Western Australia.

The current focus of natural resource management planning is through the development of community based regional strategies, which provide opportunities to promote sustainability. Government agencies must work closely together with the community to provide for sustainable management of our aquatic systems, including through regional natural resource management strategies, in combination with appropriate regulation. A significant opportunity now exists through the National Action Plan for Salinity and Water Quality and the second phase of the Natural Heritage Trust to implement large-scale improvements.

In short...

Vision

The hydrological processes of all aquatic systems are understood. Community-derived environmental values are set for each water system and they are managed through an Environmental Protection Policy and Statement of Planning Policy.

Objectives

- Improve understanding of aquatic systems.
- Protect aquatic systems of high environmental, scenic and heritage significance.
- Manage aquatic systems to agreed conditions for a range of environmental values.
- Incorporate social and cultural values when managing aquatic systems.
- Increase community awareness and involvement in the management and protection of aquatic systems.

Actions underway include

- The State Water Quality Management Strategy is being developed for implementing the National Water Quality Management Strategy in Western Australia.
- Development of the Waterways WA Framework, incorporating the State Algal Management Strategy, will establish key priorities, principles for waterways management, and a framework for waterways management across Western Australia.

In short...

- A statewide Waterways Management Needs Assessment methodology has been developed 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. A total of 208 waterways have been assessed via this process and a report released.

- The Swan-Canning Environmental Protection Policy and the Swan Canning Cleanup Program have been implemented in the Swan region. *Geocatch*-a major river restoration and catchment management initiative-has been implemented for Geographe Bay. A whole-of-catchment restoration program has commenced for the Watershed-Torbay catchment and the Wilson Inlet Action Plan has been completed. The community-based Ord Land and Water Management Strategy is moving towards regional scale initiatives.

- A River Restoration Manual that defines Western Australian solutions to restoration issues has been completed.

- The government's proposed environmental harm legislation makes it an offence to clear wetlands without approval.

- Significant steps are currently being made to protect conservation category wetlands on the Swan Coastal Plain through the Environmental Protection (Swan Coastal Plain Wetlands) Policy which is a revision of the existing *Environmental Protection (Swan Coastal Plain Lakes) Policy 1992* (Lakes EPP).

- A $500,000 Restoration and Revegetation Program for Perth's river shorelines has been established.

Proposed actions

3.36 Protect water dependent ecosystems while allowing for the management of water resources for their sustainable use and development to meet the needs of current and future users.

3.37 Ensure that the full social, environmental and economic values of aquatic systems and the impacts of development are taken into account in decision making and planning processes.

3.38 Identify the environmental values and designate environmental quality objectives for all of the State's aquatic systems and embed these within Environmental Protection Policies.

3.39 Increase the scientific understanding of aquatic systems to derive environmental quality criteria for the state's aquatic ecosystems to act as benchmarks to assess where the objectives are met or not met and management action is required.

3.40 Ensure that activities in catchments are actively managed to ensure that environmental values of downstream environments are not compromised degraded or destroyed through management, community partnerships and legislation.

3.41 Continue the work of the State Wetlands Coordinating Committee in ensuring the State Wetlands Conservation Policy is implemented.

3.42 Continue the process of nominating significant wetlands for inclusion on the Ramsar Convention list of Wetlands of International Importance.

3.43 Ensure the protection of our wild and scenic rivers and develop management plans, in partnership with Indigenous peoples, for the safeguarding of these unique river systems.

3.44 Investigate innovative mechanisms for ensuring sustainable use of catchments, such as transferable development rights, pollution offset schemes and integrated property management plans for accredited water cycle management.

In short cont'd...

Indicators and targets

- Proportion of Western Australia's aquatic systems with designated Environmental Values, Objectives and Criteria.
- The areal extent over which the environmental values are protected in each aquatic system.
- The proportion of new development proposals that is consistent and compatible with the designated environmental values.

Global opportunities

Protecting aquatic systems is a priority the world over. All global indicators show that water availability and quality is in decline. Western Australia's ability to protect and manage aquatic systems could provide a significant contribution to global effort.

Further information

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> ## SUSTAINABLE COASTAL AND MARINE ENVIRONMENTS

The coast and the marine environment are highly significant to Western Australians; many of our settlements cling to the coast and much of our recreation, leisure and tourism rely on the ocean, beaches and surrounds.

I am at the beach looking west with the continent behind me as the sun tracks down to the sea. I have my bearings…

Tim Winton[27]

Western Australia's coast and marine waters are important community assets and their sustainable use and management are closely interrelated. The vast majority of the state's population lives within 20 km of the coast. Urban and industrial development in Western Australia 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 and fishing is a popular recreational pastime. Nature based tourism servicing both the domestic and international market is growing.

Much of our coastline is largely undeveloped and in a relatively pristine state. 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, for example through development occurring on primary dune systems, and require more urgent or remedial action.

Western Australia's coastline spans a range of climatic zones, grading 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).

[27] T Winton 1993. Land's Edge, p.6

Contaminants of the marine environment can come from a range of human-derived sources as well as natural sources. The human derived sources enter the marine environment through point source discharges such as pipelines and drains and from diffuse sources like groundwater and air. The Department of Environment, Water and Catchment Protection has established a generic inventory of contaminant sources to coastal waters. 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 Hedland.

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.

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 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 implemented for Cockburn Sound via the draft Cockburn Sound Environmental Protection Policy.

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

However, 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 supports. 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.

Many submissions related to the marine environment and particularly the near-shore coastal environment. It is clear that the State Sustainability Strategy should highlight the value of the coast and recommend a way forward to simultaneously accommodate sensible coastal development and protection of the marine environment. The strategy should seek to protect the natural values of our coast and near-shore waters without compromising social and economic opportunities for future generations.

The government has recently reviewed coastal planning through a Ministerial Taskforce concerning Structural Arrangements for Coast Planning and Management in Western Australia. The Taskforce has suggested that coastal planning should be more transparent and engaging of the public because of Western Australian's deeply felt values about the coast and that there should be a sustainability-based approach to coastal planning.

The Taskforce has suggested that a Coastal Council be established with broad community and government representation, including local government and Indigenous people, to report to the Western Australian Planning Commission.

The Taskforce also recommends that the Western Australian Planning Commission prepare two statutory planning documents: a State Coastal Strategy and a State Marine Planning Strategy (covering state territorial waters). These strategies would build in sustainability values, identify areas for high priority conservation, provide guidelines for access and development, identify areas for detailed planning strategies and rehabilitation work, review all coastal Crown Land and coastal pastoral lease lands to see what should be excised and provide clear information including coastal resource atlases.

The State Sustainability Strategy is suggesting a model for implementing the Strategy through regional planning processes and the possible use of Statements of Planning Policy and other policy measures. Establishment of a Coastal Council, together with the proposed marine and coastal strategies, should provide an effective management framework to address the coastal issues raised in submissions.

However, there may be a need to address particular coastal areas where development issues are so complex that a separate sustainability assessment or regional sustainability plan is required.
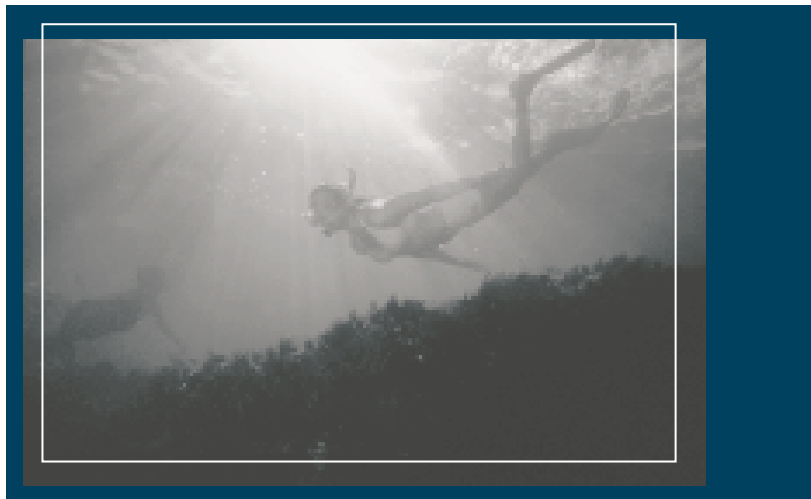
The Cottesloe Reef Fish Habitat Protection Area was created in September 2001 and provides many recreation opportunities.

Source: Glen Cowans, CMPG.

In short...

Vision

Western Australia's coast and marine environment remains accessible to the public and is protected through statutory policies and plans and other mechanisms that reflect community values.

Objectives

- Enable coastal areas to be managed in a way that reflects their special value for Western Australians.
- Establish sustainability principles in coastal planning and management.
- Protect and maintain the ecological integrity of our marine ecosystems, and the habitats and communities dependent upon them.

Actions underway include

- Report of the Coastal Planning and Management Ministerial Taskforce.
- An environmental quality management framework that utilises environmental quality objectives has been developed for the marine waters of the State starting with Cockburn Sound.
- 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 Cockburn Sound Environmental Protection Policy are met.
- A marine 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 Western Australia's marine environment.
- The Department of Conservation and Land Management is establishing a representative system of marine reserves, to facilitate conservation and multiple-use management.

Proposed actions

3.45 Progressively identify the environmental values and designate environmental quality objectives for all of the state's marine ecosystems.

3.46 Obtain the scientific understanding to derive environmental quality criteria for all of the state's marine ecosystems to act as benchmarks to assess where the objectives are met or not met and management action is required.

3.47 Reinforce and promote the principles of best management practice in coastal and marine management and continuous improvement for existing activities and ensure they are demonstrated for new proposals.

3.48 Recognise and consider the potential for cumulative impacts and synergistic effects of multiple activities in environmental impact assessments of new proposals and in the management of ongoing activities.

In short cont'd...

3.49 Evaluate the findings of the North West Shelf Joint Environmental Management Study in terms of a decision-making strategy based on the principles of sustainability.

3.50 Develop a State Coastal Strategy and a State Marine Planning Strategy with appropriate consultation.

Indicators and targets

- Proportion of coastal area managed through statutory plans with community based values, goals and management strategies.

- Proportion of the state's marine ecosystems with designated environmental values, objectives and criteria.

- The areal extent over which the environmental values are protected in each aquatic system.

- The proportion of new development proposals that is consistent and compatible with the designated environmental values.

Global opportunities

The way Western Australia manages its coastal and marine environment provides real opportunities to tap a different kind of global market, a growing tourist niche of those wanting a natural or wilderness experience.

Further information

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> SUSTAINABLE RANGELANDS MANAGEMENT

There is concern about on-going degradation of the rangelands and the commensurate loss in productivity and profitability, as well as the loss of social capital from the regions.

Across Australia's extensive semi-arid and arid pastoral lands, stocking rates as perceived by early squatters (usually viewed during better seasons), have been as rosily optimistic as humpback whale quotas perceived by eager whalers. Over recent decades as environmental degradation of pastoral lands proceeded faster than cuts in stocking rates, the carrying capacity of grazing lands has declined despite token management measures - paralleling the decline of humpback stocks and the cuts in annual quotas. And within our strictly limited areas of arable land, degradation (in the forms of salination, erosion, compaction, acidification, loss of organic debris & species diversity, etc.) are now cutting into the high hopes of sustainable yields.

Graham Chittleborough

The rangelands of Western Australia account for some 90% of the state's land mass. Many different land uses occur in the rangelands including pastoralism, mining, tourism, horticulture as well as traditional use by Aboriginal people. Almost half of these rangelands are vested as pastoral leases, and a considerable proportion of the remainder is unallocated Crown Land and Crown land reserved for particular uses.

The *Land Administration Act 1997* provides the legal framework for the administration of much of the land in the rangelands. This Act establishes the Pastoral Lands Board with responsibility for managing pastoral leases on behalf of the Western Australian Government. The Act specifically requires that the Board ensure that leases are managed on an ecologically sustainable basis. Under the present arrangements, the government will be able to exclude areas from pastoral leases for public purposes including conservation provided notice is given by December 2002. The government is currently considering which areas are to be excluded.

It is clear that management decisions and practices on the pastoral rangelands have not often been based on the principles of sustainability. While recognising real efforts of some within the industry, much of the rangeland under pastoral management is severely degraded, with a greatly reduced productive capacity. Both natural and social capital have been seriously eroded. Moving to a position of sustainability in the long-term will require rebuilding this capital, and wise management of the intact portions. The task of rebuilding presents some enormous challenges; however, they are challenges that must be met for the sake of future generations, in accordance with the principles of sustainability.

The Western Australian Government is committed to achieving sustainable resource management in the areas of agricultural and pastoral production, and to building markets based on clean and green accreditation. The government has continued support for the rural reconstruction strategy in the Gascoyne-Murchison region, which has been a useful pilot project for the state's rangelands as a whole.

The government has established a broad-based 'Pastoralism for Sustainability' Working Group to achieve sustainable land management on pastoral rangelands and ways to achieve nature conservation outcomes on pastoral lands. This will help define required reserves as well as off-reserve conservation measures.

The sandalwood industry has considerable potential to contribute to local economies and to diversification in the rangelands. Elsewhere in this draft Strategy (see *Sustainable forestry and plantations*), it is recommended that the sandalwood industry be reviewed, to enable the development of an integrated business and resource management plan that ensures sandalwood is managed on an ecologically sustainable basis that maximises environmental, social, regional development benefits as well as providing adequate financial returns to the State.

Biodiversity conservation is not well catered for in the rangelands. The Conservation Through Reserves Committee Review in the early 1970s did not deal with those regions under pastoral management. This deficiency was acknowledged in the Gascoyne-Murchison Strategy (see Box 27) a comprehensive regional initiative to address the long-term decline of that region. A specific allocation was made within this initiative for land acquisition for the conservation estate, as part of a lease adjustment program. To date, around 15 whole pastoral leases and parts of 15 other leases have been acquired for conservation. The Gascoyne-Murchison Strategy has also piloted an innovative program to embed sustainability into pastoralism through the Regional Environmental Management Program. The components of this program are described in Box 27.

BOX 27 GASCOYNE-MURCHISON STRATEGY

The Gascoyne-Murchison Strategy (GMS) is a regional initiative addressing critical economic development, structural adjustment and natural resource management needs of the pastoral industry in the Gascoyne-Murchison region of Western Australia.

Pastoralists in the Gascoyne-Murchison region are progressing toward sustainable production. The GMS has assisted pastoralists to formulate and coordinate a number of sustainability initiatives. The GMS is comprised of four core programs, one of which is the Regional Environmental Management Program. The aim of this program is to improve natural resource management from the paddock scale through to the regional scale encompassing advancement of sustainable pastoral production.

Key components of the Regional Environmental Management Program are:
- making provision for biodiversity conservation in the matrix (off-reserve conservation)
- empowering managers of leases to better manage each lease through an understanding of landscape processes
- providing tools for monitoring and an adaptive management framework
- providing access to markets through accreditation of products and services
- providing options for diversified local and regional economies
- ensuring that all activities are consistent with sustainability principles and practices through developing Environmental Management Systems for all scales of management.

These key components are currently being implemented through the work of the Ecosystem Management Unit (EMU) project linked in with an accreditation program (collectively referred to as EMU Plus).

There are significant opportunities for the pursuit of sustainability to contribute to a viable future for the rangelands. There is potential to extend the work of the Gascoyne-Murchison Strategy Regional Environmental Management Program to other parts of the rangelands to ensure sustainable management into the longer term. In addition, such a process could provide the mechanism by which the government would recognise accreditation prior to consideration of lease renewal, so that the state in its capacity as land owner and landlord can be confident about the likelihood of future management being consistent with sustainability principles. There could also be institutional change to enable licences to be issued in support of enterprise diversification across the rangelands.

Application of the Implementation Model (as discussed in the *Sustainability and governance*) to rangelands would mean involving local government more in decisions on how these areas are managed. For example, the Gascoyne-Murchison has four local government authorities that could form a Regional Council as part of the and develop an Statement of Planning Policy for their region that would guide each local area into the future. The Statement of Planning Policy would be based on the innovative work done by many of the pastoralists in the Gascoyne-Murchison and enable it to be spread to other leaseholders. This model could be repeated in other regions.

Beyond the areas of the rangelands that are managed for pastoral purposes, these remote areas face significant management problems. These management issues include the presence of feral herbivores including goats, camels and donkeys, the presence of foxes and feral cats, invasion by weeds including buffel grass, unmanaged access by 4WD vehicles, and uncontrolled wildfires.

In short...

Vision

In the rangelands, there will have been a major shift in the manner in which the properties are configured and managed: properties will be less reliant on fences with grazing management organised via controls around watering points. There will be a wide variety of grazing and browsing animals across the landscape all of which will be managed and exploited in a sustainable manner. Production will be economically viable because of reduced costs and because of the premium prices that the accredited produce will attract. In addition, the rangelands enterprises will have diversified significantly into new industries.

Objectives

- Ensure the Western Australian pastoral rangelands are managed sustainably in accordance with the Land Administration Act.

In short cont'd...

- Provide diversified and sustainable production from the rangelands.
- Ensure that all areas of unallocated Crown land in the rangelands are managed in a way that adequately reflects their biodiversity conservation values

Actions underway include

- The Gascoyne-Murchison Strategy has piloted a range of initiatives in support of sustainability in the rangelands, particularly through its Regional Environmental Management Program.
- The Minister for Planning and Infrastructure has established 5 working groups to examine alternative models of land tenure, Aboriginal access, access to pastoral leases, pastoralism for sustainability, and pastoral industry economic monitoring requirements.
- The Western Australian Rangelands Monitoring System provides regular up-dates on the condition and trends of native vegetation on pastoral leases; this system is due to be expanded to incorporate explicitly some key biodiversity values.
- Comprehensive biological surveys of the Nullarbor, eastern Goldfields the southern Carnarvon Basin and the Great Sandy Desert have been completed, and parts of the Little Sandy Desert and the Kimberleys have been surveyed.
- The program of mapping land systems across the pastoral rangelands of the state is almost complete and provides a sound basis for on-ground management including locating water points and fences

Proposed actions

3.51 Establish a Rangelands Working Group of the Natural Resource Management Council to develop a comprehensive vision of the rangelands and advise government of the priority sustainability issues requiring consideration.

3.52 Complete the review of pastoral lease boundaries in relation to biodiversity values through the Pastoralism for Sustainability Working Group.

3.53 Review the arrangements for managing unallocated Crown land within the rangelands to ensure that future arrangements adequately recognise the biodiversity conservation values of those lands.

3.54 Develop a Regional Council of Local Governments in the Gascoyne-Murchison area and create a Statement of Planning Policy on Sustainable Rangeland Management as a demonstration for other regions.

3.55 Further develop the Environmental Management Systems currently being trialed within the Gascoyne-Murchison Strategy Regional Environmental Management Program to provide a framework for accreditation of sustainable pastoralism in the rangelands.

3.56 Encourage universities to do more research and teaching on sustainable rangeland management in recognition of its significance in Western Australia, especially on capacity building for the EMU Plus program.

Indicators and targets

- Proportion of pastoral area under approved environmental management plans.
- Number of bioregions and sub-regions which have achieved appropriate levels of reservation for conservation.

Global opportunities

Rangelands throughout the world are under severe pressure and desertification is a major concern of the United Nations Environment Program. Successful development of a model sustainable rangelands program will have important potential applications in other parts of the world, especially north and southern Africa and the Middle East.

6 Sustainability and settlements

Vision for Western Australia

Western Australia's settlements are among the most attractive places to live in the world, constantly becoming more innovative and efficient in their use of resources and management of wastes while simultaneously being more liveable and equitable.

Goal

Plan and provide settlements that reduce the ecological footprint and enhance quality of life at the same time.

Priority areas for action

[
We live in an urbanising world. Aside from the growth or urbanisation itself, urbanisation is the dominant demographic trend of our time. The 150 million people living in cities in 1900 swelled to 2.9 billion people by 2000, a 19-fold increase. Meanwhile, the urban share of world population increased from 10 percent to 46 percent. If recent trends continue, by 2007 more than half of us will live in cities. For the first time, we will be an urban species.

Lester Brown[28]
]

Western Australia is highly urbanised with about 90% of the population living in towns and cities. The quality of urban environments-both rural towns and cities–is therefore highly significant to the well being of Western Australians. Our settlements should be both healthy and positive places to live. They should provide ready access to services, employment and recreational opportunities for people of all ages and abilities. In addition, because of the proximity of people, there should be a strong sense of community, engendered in part by the urban form.

To be sustainable, settlements require the integration of environmental, social and economic dimensions. The world is littered with examples of unsustainable settlements. The drifting sands of depleted agricultural soils now cover towns in Northern Africa that once serviced the wheat belt of the Roman Empire, and the ancient Roman city of Ephesus was abandoned when its port silted up after the surrounding Turkish hills were cleared of vegetation.

Western Australia also has abandoned settlements: ghost towns left behind as the Goldfields were depleted and the forests cut out. More recently, Wittenoom was closed down because of environmental health concerns arising from the mining of asbestos. Some country towns are struggling to survive, for example one Shire has lost 48% of its population in the past 25 years, and Indigenous people in remote settlements have significant health problems. Parts of Perth are also facing significant decline. These places are seeking sustainable development, they are not able to change without it.

The draft State Sustainability Strategy promotes development for these places in a way that creates a more enduring future within global constraints. While there are important environmental considerations for these places, the fundamental problems are largely related to social and economic factors.

However, for other parts of Perth and for many coastal settlements the challenge for a sustainable future is in managing growth. These settlements and areas need new priorities, new policies and new technologies that can redirect growth more sustainably.

The development of the State Sustainability Strategy provides opportunities to improve public access and transport, restore amenity and create urban forms that support the development and maintenance of a sense of community.

[28] L Brown, *Eco-Economy*, Norton, New York, 2001, p. 187

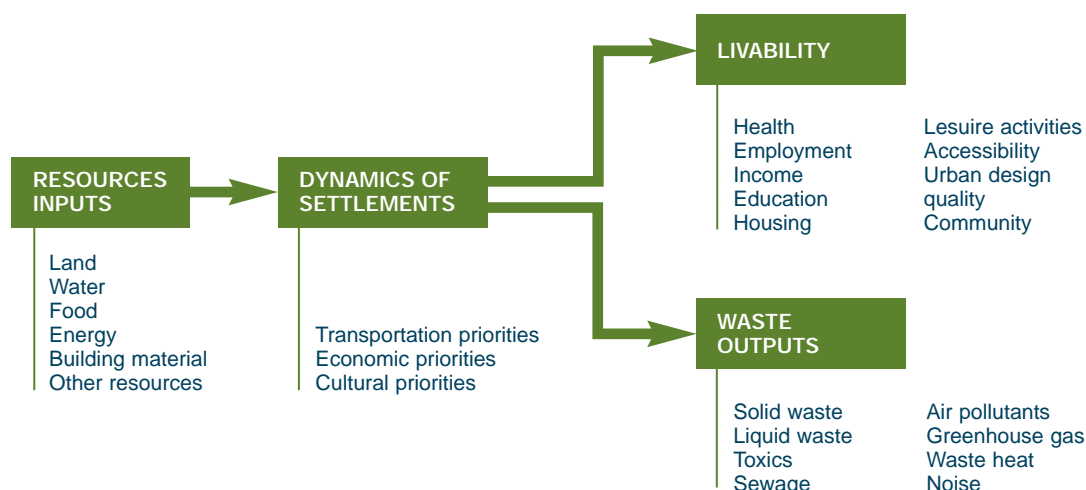## Figure 5. Extended metabolism model of human settlements.

RESOURCES INPUTS

Land
Water
Food
Energy
Building material
Other resources

DYNAMICS OF SETTLEMENTS

Transportation priorities
Economic priorities
Cultural priorities

LIVABILITY

Health
Employment
Income
Education
Housing

Lesuire activities
Accessibility
Urban design quality
Community

WASTE OUTPUTS

Solid waste
Liquid waste
Toxics
Sewage

Air pollutants
Greenhouse gas
Waste heat
Noise

Figure 5 shows the Extended Metabolism Model[29] developed for the 1996 and 2001 Australian State of the Environment Reports[30][31]. This model suggests that for a settlement to be sustainable, resource consumption (such as land, energy, water and materials) and waste (solid, liquid and gaseous) must be reduced, while simultaneously improving liveability (in areas such as income, housing, health, education and community). This model gives substance to the *Settlement efficiency and liveability sustainability* principle.

A range of current government initiatives and projects are addressing many aspects of settlement sustainability including:

- water supply (The Premier's Water Taskforce)

- waste (Waste Management Board)

- planning (Future Perth)

- freight (Freight Network Review)

- electricity (Electricity Reform Taskforce).

The draft Strategy discusses these matters from a sustainability perspective. Additional processes are required to consider sustainable community regeneration and sustainable building and construction.

Many settlement sustainability issues can be resolved through the proposed Implementation Model involving regional councils and local governments as discussed in *Governance and sustainability*. Regional Councils arose primarily from the need for local governments to form partnerships to solve their waste problems.

The Eastern Metropolitan Regional Council (EMRC), consisting of six local government authorities, is a very good example of how effective regional councils of local government can be in resolving sustainability issues. The EMRC has some forty staff working on a range of issues to do with sustainability including natural resource management and greenhouse. A recent study by EMRC has highlighted for the first time the lack of regional approaches to managing storm water runoff and drainage in the city and in rural areas. This has significant environmental implications for nutrient management and salinity near to the city. It has become even more critical now Perth's water crisis has focussed attention on the need to use all water, including runoff, effectively (see *Water supply*). This issue illustrates the importance of a regional local government approach to determining how best to ensure storm water recharges groundwater where it is needed. If water tables are too high, more rainwater tanks could remove excess groundwater recharge.

The necessity of such a 'fine-grained approach' to managing sustainability issues in urban environments is obvious for most of the issues considered in this section. The Implementation Model suggests that regional councils be the main driver to ensure that general strategies are given a regional perspective in different regions or rural areas through detailed planning. This could then be

[29] P Newman and J Kenworthy, *Sustainability and Cities*, Island Press, Washington DC, 1999.

[30] PW Newton, S Baum, K Bhatia, SK Brown, AS Cameron, B Foran, T Grant, SL Mak, PC Memmott, VG Mitchell, KL Neate, A Pears, N Smith, RJ Stimson, SN Tucker & D Yencken 2001, Human Settlements, Australia State of the Environment Report 2001 (Theme Report), CSIRO Publishing on behalf of the Department of the Environment and Heritage, Canberra, 2001.

[31] State of the Environment Advisory Council, *Australia: State of the Environment 1996*, CSIRO Publishing, Melbourne, 1996.

reflected in statutory Statements of Planning Policy and local town planning schemes where appropriate.

Future Perth is a very significant planning process that is preparing a strategic plan for the future of the metropolitan region and will reflect sustainability principles (see Figure 6 and <http://www.planning.wa.gov.au>). The finalisation of *Future Perth* will occur after the draft State Sustainability Strategy and can build on similar principles.

Figure 6. Future Perth process

FUTURE PERTH PROCESS

POLICY AND PLAN FORMULATION

Consultations
Workshops
Seminars
Focus Groups

Working Papers
• Planning Context
• Sustainability
• Employment
• Population
• Urban Costs
• Infrastructure
• Transport
• Housing
• Environment
• Activity Centres
• Urban Capacity
• Creative City

State Planning Strategy

Issues Paper

Development Options and Evaluation Workshops

FUTURE PERTH OUTPUTS

Strategic Plan

Policies

Funding

Legislation

Institutional

ACTIONS

• Railway Precincts
• Urban Renewal
• Recreation and Cultural Projects
• Integrated Transport Development
• Demonstration Projects
• Economic Rejuvenation
• Transport Infrastructure
• Activity Centres and Networks
• Urban Villages
• Other Projects

OUTCOME

Sustainable City

Green
Liveable
Creative
Efficient
Equitable

Source: Department for Planning and Infrastructure

> ## MANAGING URBAN AND REGIONAL GROWTH

There is a need to promote growth in some areas where there is clearly real social and economic disadvantage and to redefine growth in places where development is a threat to sustainability. Western Australian inland country towns are the settlements most in need of strategies to promote growth. Redefining growth needs to occur in Perth and coastal settlements.

The relative isolation and small populations of rural towns compared with closer settled areas along the coastal sand plain from Gingin to west of Albany makes them ideal opportunities to develop model sustainable communities.

Eco Town Inc.

With a high percentage of the population concentrated in Perth and the strong link between urban form and sustainable development, the priority sustainability issues for WA is focussed on future development of the city and other major centres such as Geraldton, Bunbury and Albany. The issues of economic vitality, social equity and ecological integrity are core elements of a sustainable approach to development within the city.

Royal Australian Planning Institute

Sustainability promotes growth (economic and social) in some areas where there is distinct poverty, for example in developing countries, and redefines growth for much of the developed world, which uses significant resources.

Country towns in decline have a range of environmental, social and economic needs. Regional development programs exist to address all of these needs, however there are few that are able to integrate all three. Eco Towns[32] is a project that is doing this through a partnership in several Wheatbelt towns. The project is creating local employment through environmental improvement, particularly the use of stored rainfall to reduce the impact of rising saline groundwater damaging towns. Other 'green job' projects are also being implemented. For example, Green Skills, a Denmark based organisation that trains people in land care, energy efficiency and other green jobs, also share the goal of sustainability employment opportunities.

Perth has pioneered the redefinition of urban growth through its internationally acclaimed Liveable Neighbourhoods Community Code (see case study on *Liveable neighbourhoods: guiding new developments for a more sustainable future)*. This voluntary code has significant sustainability benefits through encouraging reduced car use, a greater sense of community, greater access to services and more efficient use of land.

The Western Australian Government has significant ability to manage growth through its land release programs, the Metropolitan Development Program and Country Land Development program. Perth's sprawling form has reached the stage where clearer guidelines for land release need to be developed. *S*haping city growth needs to be a key consideration for Future Perth. Another powerful growth management technique is redirecting growth to 'brownfields' rather than 'greenfields', that is to areas where growth is needed to overcome decline. This has many sustainability benefits and is considered under *Revitalising declining centres and suburbs.*

Growth management also relates to water issues, to air quality issues and to land use-transport planning all of which are discussed later in this document.

[32] See submission from Eco Town Inc.

In short...

Vision

Growth management is implemented to enable towns and areas of the city with significant decline problems to be developed in sustainable ways.

Objective

Create a sustainable balance of employment, transport, housing choice and community development by managing urban and regional growth, including population change, through better urban structure.

Actions underway include

- The State Planning Strategy is being progressed through Future Perth to develop visions for the long-term future of South West Urban systems.
- The Liveable Neighbourhoods Code is being finalised as the mandatory policy for structure planning and subdivision and is being applied at major projects on the urban fringe of Perth and in key regional centres.
- Models for the provision of district-level transit-supported development are being developed in the North West Corridor.
- Infrastructure provision and land supply is being coordinated through the Metropolitan Development Program and the Country Land Development Program.
- A strategic development framework is provided for local areas through coordinating and developing Local Planning Strategies with local government.

Strategies

4.1   Facilitate projects to provide sustainability gains for country towns including regional Sustainability Strategies that build on the 'sense of place' stories of each community.

4.2   Encourage employment initiatives such as small business incubator projects as a catalyst for 'growing' job opportunities in outer metropolitan urban areas.

4.3   Use Future Perth processes as a mechanism to generate region-wide community debate on urban growth and test implementation options to achieve optimal employment, residential and centre location and to reduce urban sprawl.

4.4   Develop strategies to proactively manage the location of urban development, including consultative agreements with local government on land release and using the Metropolitan Development Program and the Country Development Program to match land supply to the cost-efficient provision of infrastructure.

4.5   Progressively implement Bush Forever.

4.6   Protect designated groundwater mounds from incompatible developments and use water sensitive urban design (see *Our water future*) to rehabilitate urban wetlands.

Indicators and targets

Proportion of urban development (in cities and regional areas) considered revitalised.

In short cont'd...

Global opportunities

Many Western Australian urban services firms already have a presence in the Asia-Pacific region. If it can offer a model for how to manage urban and regional growth, Western Australia can build on the existing urban services exports.

Further information

Armstrong, R & Head, G 2002, *Liveable Neighbourhoods: Guiding New Developments for a More Sustainable Urban Future*, sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/LivableHoods/LiveableNeighbourhoods.htm>

Department for Planning and Infrastructure *Future Perth*, <http://www.planning.wa.gov.au/publications/futureperth/fp_content.html>

Murdoch University, Institute for Sustainability and Technology Policy <http://wwwistp.murdoch.edu.au/>

East Perth is a revitalised old industrial site that has, like many inner area developments, helped to reduce the sprawl of Perth and enable better use of urban infrastructure.

Source: Peter Newman

> REVITALISING DECLINING CENTRES AND SUBURBS

Some areas of Perth are in decline after the first phase of development has passed. Most inner areas have regenerated and the government is helping regenerate other areas through the Midland and Armadale Redevelopment Authorities and the New Living Program for public housing. However, there are whole urban regions where revitalisation is stalled and could be unlocked to achieve broad sustainability outcomes.

The social and cultural aspects of sustainability are of particular importance to Swan. Despite its proximity to the centre of Perth, the region is socially disadvantaged and lacks cultural focus (no major tertiary institution is one example). Sustainability needs to be considered in terms of the inter-and intra-regional inequities that exist in a City where growth is driven by demand for living near the coast and where investment in social infrastructure favours the wealthier areas, despite concerns about the sustainability of continued linear growth.

City of Swan

In sustainability terms there is a need to revitalise some areas where decline is apparent through significant poverty or diminishing opportunities. In these areas there is little chance to renew the housing, transport and other infrastructure in more sustainable ways unless there is a development rationale. What can occur is that an area continues to 'spiral down', causing significant social problems. After a period of decline the market forces redevelopment to occur. Around the world governments have actively pursued 'urban renewal' schemes. Some of these have had negative social impacts as they have displaced socially and economically disadvantaged people.

It is possible to assist communities that are in areas of decline to form partnerships with local and state government agencies and local industry, so that they can begin the processes of renewal themselves. The overlap of poverty and unsustainable patterns of urban development have been explored in many other cities and research studies.

This is discussed in the background paper prepared for the *State Sustainability Strategy* entitled *Sustainable Community Regeneration: Issues and Opportunities*. The paper sets out the rationale for regeneration and revitalisation in Perth. It shows that the inner areas of Perth (such as East Perth and Subiaco) have mostly been regenerated over the past twenty years through market forces but also through government assistance including some of the New Living areas (revitalised public housing estates) and Redevelopment Authorities such as the Midland and Armadle Redevelopment Authorities.

However there are also areas in Perth's eastern, middle and outer suburbs where the decline process has set in and there is significant relative social disadvantage. The paper shows that issues include: urban design, employment creation, housing, infrastructure, local environmental issues and most of all community development.

However, a model for how many of areas can be revitalised is not obvious. They cannot all be made part of a redevelopment authority as with East Perth or Subiaco and rarely is public housing provided. Therefore, an appropriate model for sustainable community regeneration needs to be developed and the draft Strategy proposes that a 'Reviving the Suburbs' trial be conducted.

The draft Strategy recommends that a demonstration project be established to develop a model for a community-based revitalisation process. State government processes to support this trial can then be developed including new development codes and other incentives for revitalisation.

In short...

Vision

A set of techniques are developed and trialed with community support that enables older, middle and outer suburbs to be revived and thrive.

Objective

To revitalise key existing centres and suburbs that are in decline to strengthen their local economies, increase their social capital and ensure sustainable use of existing infrastructure and services, including leverage from proposed government investment.

Actions underway include

- 'Enquiry-by-design' processes to promote revitalisation options for some centres and suburbs including Armadale, Midland, Claremont and Mirrabooka.
- The Middle Neighbourhoods Study is being developed by the Department for Planning and Infrastructure as a model for measuring the relative performance of suburbs against design and sustainability indicators.
- The Armadale Redevelopment Authority has been established
- Funding has been provided to support town centre renewal in Gosnells

Proposed actions

4.7 Develop a 'Reviving the Suburbs' initiative to revitalise declining suburbs based on community processes, innovative urban design, public-private housing ventures, co-location of services, improved infrastructure and community arts projects.

4.8 Trial 'Reviving the Suburbs' in partnership with a local government.

4.9 On the basis of this trial create an urban design Community Code for Revitalisation.

4.10 Enable more targeted government intervention and investment into local government areas of decline and opportunity though ongoing revitalisation programs.

4.11 In consultation with local government, progress higher density residential development by linking the provision of government infrastructure (infill sewerage program and underground power) and services (expansion of public transport) with commitments to local urban consolidation.

4.12 Research the techniques of urban revitalisation and their relevance to Perth in the context of the 'Reviving the Suburbs' trial.

Indicators and targets

Proportion of declining areas revitalised.

Global opportunities

Skills associated with revitalising urban areas would have considerable global demand.

Further information

RJ Armstrong, *Sustainable Community Regeneration*, background paper for the State Sustainability Strategy, CD-ROM, 2002

R Armstrong & G Head, *Liveable Neighbourhoods: Guiding New Developments for a More Sustainable Urban Future*, sustainability case study, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/LivableHoods/LiveableNeighbourhoods.htm>

R Armstrong, *Reurbanisation in Perth: East Perth and Subiaco Contributing to a Growing Trend Towards a More Sustainable Perth*, sustainability case study, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/Subiaco/Subiaco.htm>

Rebbettes, D 2002, *Fremantle: Thriving Economically through an Urban Heritage Focus*, sustainability case study, Department of the Premier and Cabinet, Perth, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/Fremantle%20Heritage/fremantleheritage.htm>

> INTEGRATING LAND USE AND BALANCED TRANSPORT

Sustainability in settlements is strongly influenced by the priority given to transport modes and by how land use is integrated with these modes. Perth's development has been heavily influenced by our dependence on the car and truck and this needs to be more balanced with better-integrated land use and transport.

Eighty four percent of people in the metropolitan area want transport policy and planning to favour environmentally friendly modes, and half of the population believe planners have an exaggerated impression of the community's demand for car-oriented planning.

Subiaco Bicycle Users Group

Excessive freight movement is generated when land use is not planned to enable efficient freight movement and integrated freight terminals are not provided. This issue is dealt with under 'Freight and Regional Transport'.

Car dependence arises when cities are built with 'scattered' suburbs, forcing people to rely heavily on cars to reach services, jobs, schools and shops. Around the word, planning is being undertaken to avoid this phenomenon; to build and rebuild cities where land use is integrated with public transport, walking and cycling so that there is a much more balanced transport outcome and more focussed land use. As Professor Ian Lowe says, 'better urban planning would provide accessibility without requiring mobility'[33].

Overcoming car dependence is fundamental to sustainability in cities. In environmental terms this results in less land, transport energy, water use and pollution and greenhouse gases. In social terms, integrated land use and balanced transport can contribute to a reduction in crime, healthier people through increased walking and cycling, more community opportunities and enhanced 'sense of place'. This can also provide increased opportunities for people who don't own a car–over half of the total population. Integrated land use and balanced transport can also achieve economic gains by providing more efficient transport, less infrastructure (shorter pipes and cables) and better provision of community facilities. In addition, because of the reduced demand for infrastructure, more capital is available to the productive economy, greater employment opportunities arise, for example through the location of knowledge-oriented jobs. Finally, it has been estimated that individual households could save up to an additional $750,000 in superannuation over a lifetime by having one less car.

In Western Australia, there have been some important innovations in overcoming car dependence that have attracted worldwide attention, particularly the Liveable Neighbourhoods Community Code and the new electric train system. Liveable Neighbourhoods is the code for planning of new suburbs that enables development to be more sustainable. It requires solar orientation (see *Building sustainably*) and more particularly orients housing towards workable neighbourhood centres and public transport sub-centres. The Code has won several national and international awards and is increasingly becoming the norm especially in joint venture - state government projects like LandCorp's Atwell South and LandStart's Butler, Brighton, Clarkson and Leda developments.

The use of the Liveable Neighbourhoods Code needs to be expanded with a view towards making this mandatory. A new code also needs to be developed to apply to revitalisation projects (as outlined in *Revitalising declining centres and suburbs*) and both Codes could be integrated into the proposed Guide for Sustainable Planning, Building and Construction.

The Perth electric rail system has been an outstanding success story with patronage growing from six million passengers a year in 1992 to 30 million seven years later. This is likely to double again with the southern rail extension to Mandurah. No other city has achieved such growth (see Figure 7).

[33] Professor Ian Lowe in Sustainable Population Australia submission, p.13.

Figure 7 Rail patronage in Perth and Adelaide 1991-1997
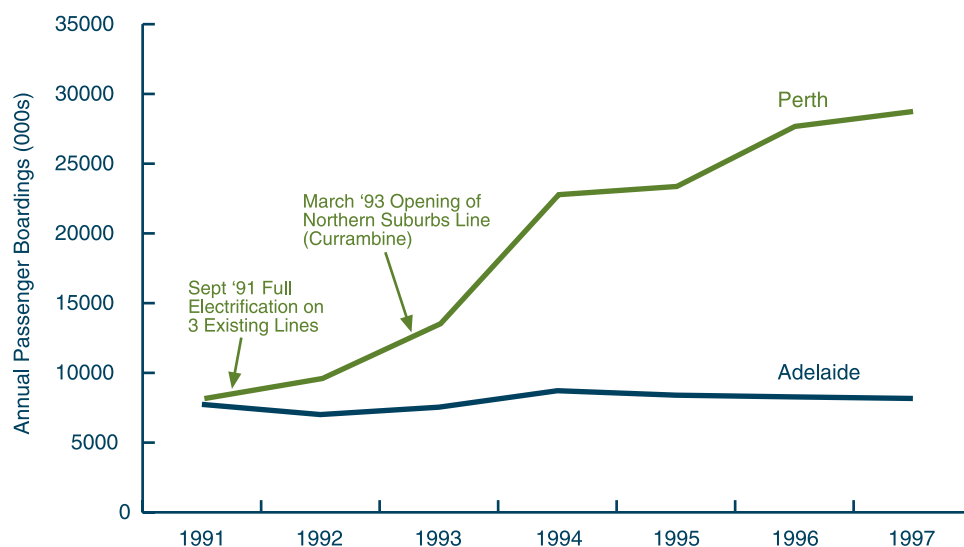
Source: Jeff Kenworthy, Murdoch University

The train's success has been due to its speed, comfort and integration into a broader system. This major upgrading of transport infrastructure has provided the opportunity for revitalising sub-centres (and the city centre), to integrate other forms of transport into station precincts and to shape new development in less car dependent ways.

The new rail system provides a 'spine' of fast transport services but not all of Perth has access to this and increasingly journeys are across the city between corridors. There are successful cross-city bus services but some of these are reaching capacity. Integrated bus service expansion and extended rail services need to be planned into the longer-term. The potential role for light rail in providing links between corridors and sub-centres needs to be explored. A long-term public transport plan is needed to guide the city into the future. This can be done as part of the updating of the Metropolitan Transport Strategy.

Other forms of transport including cycling and walking are critical to sustainable urban development. The Physical Activity Taskforce (see case study) has demonstrated the multiple benefits of increased physical activity in our daily lives. Social benefits from an increase in walking and cycling are also being discovered (see case studies). The Pedestrian Advisory Committee of WA conducted a seminar in May 2002 called *Battery Reared or Free-Range Children*. This seminar considered a British study which found that children who are driven to school do not develop the same 'sense of place' and confidence in taking risks as those who walk and therefore are less able to mature in this area of their personal development.

The need to facilitate pedestrian activity and cycling requires more design and infrastructure (especially at the local level), support in the form of engineering codes and educational campaigns. This should include a revamped Perth Bicycle Plan and a focussed strategy of working with local Bicycle User Groups.

Individualised marketing and household travel management programs have been successfully demonstrated in Perth to help provide a shift towards more balanced transport.

Finding a better balance of transport modes and integrating these with land use planning can be controlled through the funding of infrastructure. An Integrated Funding Framework needs to be implemented to support the sustainability outcomes outlined in the draft Strategy.

In short...

Vision

Transport and land use decisions are so interconnected and synergistic that a more balanced, less car dependent city rapidly emerges and solves multiple urban sustainability problems.

Objectives

- Maximise the opportunity to increase residential, employment, retail, community and entertainment activity around key transport nodes and in major centres.

- Achieve a more sustainable balance between car use and other transport options through the promotion and provision of efficient and effective public transport and non-motorised personal transport alternatives.

Actions underway include

- Restructured agencies to integrate planning and transport functions into the Department of Planning and Infrastructure.

- The doubling of the Metopolitan railway system has begun including the 74km $1.4b southern rail line and rail extensions to Butler Brighton and to Thornlie.

- Through the *Building Better Stations* program, options have been examined to improve and implement transport land use integration for existing train stations. Opportunities are also being examined for maximising population and employment at future stations on the South West Metropolitan Railway.

- Established the WA Pedestrian Advisory Council.

- In consultation with the local communities, sub-regional Integrated Transport Plans have been prepared which prioritise improvements for public transport, cycling, and walking facilities over 5, 10 and 20 year time-frames.

- Programs to reduce car use through individualised marketing

- Concession fares frozen and time validity increased for public transport ticketing.

- Exploring new Smart Card ticketing.

- Alternative fuel vehicles are being introduced into the state's bus fleet and the use of Australian Design Rules are being fostered to achieve better vehicle emission controls.

Proposed actions

4.13 Move towards requiring all government and significant residential development projects to adopt the framework which has been used in the Liveable Neighbourhoods.

4.14 Examine pedestrian needs on all local streets and in town centres to create pedestrian friendly environments.

4.15 Update the Perth Bicycle Plan and work closely with local Bicycle User Groups to better resolve local and regional bicycling issues and assist with the provision of safe local bicycle routes, shared paths and end of trip facilities to encourage children to cycle and walk to school.

4.16 Build on the new metropolitan rail system by integrating all other transport modes to feed into it and actively prioritise new station precincts where better integration is possible.

4.17 Research and document vehicle trip behaviour to establish planning implications.

4.18 Research parking demand at suburban centres.

4.19 Develop programs that increase mixed-use development in strategic and other regional centres with good public transport provision.

In short cont'd...

4.20 Encourage local government to provide for flexibility in residential zoning, which allows small businesses and 'corner shop' retail facilities to locate in existing suburban communities.

4.21 Encourage flexibility in local government parking policy in areas where there is good public transport.

4.22 Review and update the Metropolitan Transport Strategy to accommodate the doubling of the metropolitan rail system, integrated bus, pedestrian and cycle networks with potential future upgrading and household travel management programs.

4.23 Investigate the extension of Australian Design Rules to cover noise and other environmental issues for all vehicles.

4.24 Work to remove inequity of taxation treatments and salary packaging arrangements that impact on public transport usage.

4.25 Within the Department of Planning and Infrastructure establish and implement a whole-of-portfolio Integrated Funding Framework to enable integrated landuse and transport planning and balanced multi-modal transport for sustainability objectives.

4.26 Expand research and training on the integration of transport and landuse for more balanced transport outcomes and make this a component of the proposed Masters in Transport Studies being established between the universities.

Indicators and targets

- Number of new dwellings within one kilometre of a rail station.
- Modal split.

Global opportunities

Cities around the world are attempting to better integrate land use and transport planning. Western Australia's experience could be globally significant.

Further information

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> MANAGING FREIGHT AND REGIONAL TRANSPORT

The Western Australian Government made a commitment to review the freight network and began this soon after taking office through a series of innovative public forums, built around the concept of sustainability. This process has been highly successful and has demonstrated that a transparent process, engaging all stakeholders with the goal of sustainability can come up with mutually supportive solutions that are better for the economy, the community and the environment.

It is ironic that the very cars and trucks that have made massive urbanisation possible are now contributing to the deterioration of cities.

Lester Brown[34]

The Freight Network Review began with a role-playing exercise involving the trucking industry and community groups in the Hills area that helped find solutions to a noise problem and did not require the construction of a proposed by-pass.

A Freight Congress was held involving 150 people from all major stakeholder groups as well as randomly selected members of the public. The Congress set the agenda for 9 months of intensive work by 6 working groups. The first group created a paper on *Sustainability in Relation to Freight*. This set the principles for the other groups and a Master Plan and also recommended the use of a public multi criteria analysis process to consider some major road planning proposals.

The Fremantle Eastern Bypass and the extension of Roe Highway through Bibra Lake have generated serious divisions in the community. The multi criteria analysis process was applied to these situations through a series of workshops involving Dr David Annandale from Murdoch University. This process identified 23 alternative options and developed 37 environmental, social and economic criteria. A Community Committee worked with experts to translate these criteria into measurable factors and weighted the criteria to reflect community and industry values. These weighted scores were then applied to the alternative routes.

The final workshop found that the four groups in the process–industry, community, environmental and government–all agreed on the best options. None of the options involved a road through the Bibra Lake wetlands that had previously been proposed as part of the controversial Roe Freeway Stage 8. This sophisticated and transparent process has pioneered a technique in Western Australia for applying sustainability to the resolution of a complex planning problem with practical outcomes. The multi-criteria technique can now be applied to any complex planning decision with confidence. Those involved in the process have developed capacity that is arguably world's best practice.

The particular road planning options need to be part of a broader strategic planning solution and this was developed by the Freight Network Review Working Groups, which was approved by a reconvened Freight Congress in June. The solution involved a strategy to increase the use of rail from the Port of Fremantle (the focus of many of the freight problems) from 3 to 30% as well as reducing the number of empty truck movements so that the growth of trucks could be curtailed to keep it at present levels. Other identified needs were for planning to begin immediately on the development of an Outer Harbour container terminal and determining rail and road connections and a freight interchange node.

The Congress also considered that the Freight Network Review should be more broadly applied to the development of road-rail nodal interchange points (to ensure that freight routes are clearly planned and not compromised) and that demand management should be put on the agenda. The review could be usefully extended to the rest of the state.

The process of developing Regional Transport Plans as part of the State-Local Government Roundtable, could be the mechanism for extending the Freight Network Review. It can also provide the opportunity to incorporate local and regional perspectives on passenger transport futures, particularly in light of the oil vulnerability issues (see *Oil vulnerability, the gas transition and the hydrogen economy*).

[34] L Brown, *Eco-Economy*, Norton, New York, 2001, p. 208

In short...

Vision

Freight becomes more efficient, more rail-based and more connected through inter-modal centers so that the expected large growth in trucks does not occur. Simultaneously, improved regional passenger transport also becomes available.

Objectives

- To achieve an integrated and safe freight transport system that is economically and environmentally sustainable and minimises community conflict.
- To enable transport to meet the needs of regional communities.

Actions underway include

- The Freight Network Review was undertaken in close consultation with community and industry.
- Accreditation for the road transport industry is occurring.
- Strategic planning to support freight rail in limited markets is being undertaken.
- The government is participating in national processes to achieve uniformity of regulations and standards.
- The new Australian Design Rules for vehicle emissions are being introduced.
- *The Prospector* train is being upgraded.

Proposed actions

4.27 Implement the Freight Network Review including the switch to rail freight in the Fremantle Port from 3% to 30% of all containers, the more efficient use of trucks through modal interchange nodes and an acceleration of strategic planning for the Outer Harbour.

4.28 Extend the Freight Network Review principles and concepts to the whole state.

4.29 Develop a mechanism to manage conflicts between freight and residential activity, using zoning options to create incentives for property owners and site management options where necessary.

4.30 Encourage the expansion of freight rail infrastructure to effect modal change.

4.31 Ensure that all complex and contentious road and rail planning is done using sustainability techniques such as the multi criteria analysis process developed for the review of Roe Highway, the citizen jury approach used for Reid Highway and landuse/transport modelling (see *Sustainability and governance: Sustainability assessment*).

4.32 Develop a long-term strategy for country passenger rail.

4.33 Create Regional Transport Plans with Regional Councils for freight and passenger services in country and city regions.

Indicators and targets

- Proportion of freight by rail.
- Reduction of truck movements per unit of cargo moved.

Global opportunities

The need to develop sustainable freight movement in cites and regional areas is a global issue.

Further information

Department for Planning and Infrastructure
<http://www.dpi.wa.gov.au/hotspots>

> PRESERVING AIR QUALITY

An Air Quality Management Plan has been developed for Perth and this needs to be implemented to prevent air pollution reducing quality of life in the city.

Perth is on the threshold of having an air quality problem. The levels of photochemical smog in Perth during summer regularly exceed guidelines established by international health experts and other scientific bodies. Likewise in the colder months, a smoke haze frequently hangs over Perth. In most cases these episodes of unacceptable air quality are perpetuated by weather conditions that prevent air pollutants from dispersing rapidly. The management of the key pollutant sources is therefore essential.

Department of Environmental Protection[35]

Perth's air quality has been a major concern since monitoring in the 1970's discovered that there were significant health threats on 10 to 20 days a year. This is because Perth has occasional atmospheric inversion layers that trap pollutants from motor vehicles, industry, domestic wood burning and bush fire smoke. The resulting problems are at various times photochemical smog, particulate pollution (or haze), and also certain toxic chemicals (usually at low levels but requiring attention as part of international efforts at reducing motor vehicle emissions).

The Perth Air Quality Management Plan has had bipartisan support and sets out priority actions in:

- land use transport and planning to reduce car dependence and enable more balanced transport options

- vehicle emissions programs that are part of the National Environment Protection Measures for each pollutant

- community education and behaviour change programs related particularly to the issue of domestic wood burning

- industry emissions, particularly those in the Kwinana region.

These programs need to be continued and accelerated where feasible. The innovations suggested in land use and transports are outlined in *Integrating land use and balancing transport*. The vehicle emissions programs are part of a Commonwealth Government process and the Western Australian Government needs to ensure that no attempt is made to weaken this and avoid compliance with world best practice.

Recent advances in the United States and Europe mean Australia must respond to ensure we are at the vanguard of this change. Domestic wood burning needs to be carefully monitored and if the educational process is not working sufficiently then mandating standards may be required. Industry emissions have been helped by the reduction in coal burning by Western Power in Kwinana and this is planned to continue. Monitoring should ensure industry emissions continue to improve.

The introduction of Clean Fuel regulations under the Environmental Protection Act saw Western Australia become the national leader in clean transport fuels. These regulations have seen:

- a reduction in sulphur from diesel fuel

- a reduction in benzene from petrol

- removal of the toxic additive MTBE

- complete removal of all lead from petrol

- reduction in the hydrocarbons that evaporate from petrol and cause smog.

The next stage will be to investigate in detail some of the air toxics from wood burning, industry and transport fuels.

The goal for Perth should be to ensure that the city's air is as clean as any other city in the world of comparable size. Careful monitoring will be needed under the goals established by the Commonwealth's National Environmental

[35] Department of Environmental Protection, *Perth Air Quality Management Plan*, 2000, Government of Western Australia, Perth.

Protection Measures, and if the results show the city is not reaching that standard then more drastic implementation procedures and policies will be required.

Outside Perth there are occasional air quality issues such as the sulphur dioxide levels at Kalgoorlie and the emissions from particular industries in rural areas. These need to be pursued by the Environmental Protection Authority as they will relate to industry conditions set by the Authority. If monitoring indicates a problem then action must be taken.

Although there are economic implications in addressing pollutants, the overall economic implications when health costs and property damage are considered as well as the social costs, generally lead to overall sustainability gains from improving air quality. The studies to back up this integrated view of air quality need to be reviewed and updated regularly.

Many actions that address air quality are included throughout other sections of the draft State Sustainability Strategy including *Sustainability and settlements: Land use-transport integration and balanced transport, Managing freight and regional transport, Sustainable energy and building sustainably.*

In short...

Vision

Perth's air is the cleanest of any city of its size in the world.

Objectives

- Maintain and improve air quality for this and future generations so Perth is the cleanest city of its size in the world.
- Allow economic and social development while not compromising air quality objectives.
- Protect human health and the environment, including biodiversity.
- Ensure future development recognises and manages air quality issues and reduce emissions to the atmosphere to the maximum practical extent.

Actions underway include

- Government is currently implementing the Perth Air Quality Management Plan, involving priority actions in the areas of land use transport and planning, vehicle emissions, community education and behaviour change and industry emissions.
- Government is developing a State Air Environmental Protection Policy to provide a strong legislative foundation to protect air quality around Western Australia.
- Monitoring programs for the National Environment Protection Measures for ambient air quality (for the priority air pollutants of NO_x, SO_2, lead, CO, PM10 particulates, ozone) are well established.
- Development of National Environment Protection Measures for air toxics is in progress and the government is implementating the National Environment Protection Measures for the testing of diesel emissions.

Proposed actions

4.34 Continue implementation of the Perth Air Quality Management Plan, focussing on coordinated action to ensure Perth is the cleanest city for its size in the world.

4.35 Develop a Statement of Planning Policy for Integrated Land Use Planning and Transport that demonstrates, among other things, how local planning can minimise air pollution. This is a matter that could be progressed through the State-Local Government Partnership.

In short cont'd...

4.36 Continue to provide community information and education to change behaviour, especially on the burning of domestic wood fires and to encourage a shift to non-car modes of transport.

4.37 Define and resolve the linkages potential conflicts or competing interests between air quality issues and Greenhouse issues.

4.38 Continue to monitor the air quality criteria set by National Environmental Protection Measures.

4.39 Continue to develop air quality guidelines and standards through national forums and further develop methods for assessing the impacts of air quality on human health and the environment.

4.40 Undertake cost benefit analysis of air quality decisions (i.e. the environmental and social cost of actions and decisions to assist in sustainability assessments).

Indicators and targets

Comprehensive analysis of air quality is undertaken on an annual basis and published by the Department of Environmental Protection and as part of the State of the Environment Reporting process. The key indicators are trends in air quality for the priority air pollutants of NO_x, SO_2, lead, CO, PM10 particulates, ozone and compliance with the National Environmental Protection Measure for Ambient Air Quality.

Global opportunities

Western Australia has developed world-class expertise and experience in managing air quality issues and there are opportunities for this expertise to be exported and offered to developing countries with similar air quality problems.

Further information

Department of Environmental Protection 2001, *Air Quality in Perth* 1992-1999, viewed August 2002,
<http://www.environ.wa.gov.au/downloads/Technical_Series/109.pdf>

> ### REDUCING AND MANAGING WASTE

Reducing and managing wastes in settlements is fundamental to ensuring a healthy environment and good quality of life. Recent management experience has revealed continuing improvement and innovation in solid waste management but problems with hazardous waste.

… it is imperative that the State Sustainability Strategy for Western Australia take a deliberate and detailed look at the issues evolving in waste management particularly the importance of ensuring the maximisation of the recovery and recycling of resources from waste.

Amcor Recycling

The state government is committed to the elimination of all wastes. Sustainability requires a shift toward a closed loop economy, where the wastes from one part of society become the raw materials for another and where we extract the maximum value from our natural resources. The government will make significant progress toward achieving a zero waste society by 2020.

Achieving this vision will require major advances in product stewardship, technology and community commitment for waste reduction. The development of markets for recycled materials is also an essential component of moving to zero waste. Government can take an active role in stimulating the development of markets for recycled materials through its own purchasing requirements as outlined in *Sustainability and Governance: Embracing sustainability in government agencies.*

It is no longer acceptable to continue to disposel of waste to landfill, and the community is demanding preventative strategies to minimise wastes and particularly those that can enable the elimination of hazardous wastes. Technologies for treating and storing wastes and the location of waste facilities have been of great concern to many in the community, especially since the Bellevue chemical fire–one of the largest chemical incidents in Australian history.

In order to implement the vision for zero waste by 2020, the government has adopted the WAste 2020 Strategy and has committed to:

• achieve the commitment and participation of all stakeholders in waste reduction, re-use and recycling practices and processes

• prevent the generation of waste

• maximise the recovery and recycling of resources from waste

• establish effective frameworks and structures to coordinate and facilitate waste reduction, re-use and recycling, the recovery of resources and the safe management of remaining wastes.

The WAste 2020 Strategy provides a comprehensive set of strategies to achieve zero waste. The government has established a Waste Management Board to implement the WAste 2020 Strategy. It is expected that their plan will be based on achieving at least 70% of this goal through reduction, reuse and recycling, and 30% through secondary waste reprocessing. Life cycle cost analysis will be used to determine the most appropriate and cost-effective method of processing waste, incorporating the environmental and social costs of each method. Waste to Energy will only be used in accordance with the waste management hierarchy, State Bioenergy Policy and where it can be justified on the basis of lifecycle analysis. The Waste Management Board will establish guidelines and codes of practice for the selection, siting and management of secondary waste reprocessing facilities. This legislation will also provide a means to implement important components of government policy and the WAste 2020 Strategy. Waste management decisions to achieve zero waste will be based on a rigorous application of the waste management hierarchy (see Figure 8).

The Waste Management Bill will contain provisions for achieving world best practice in the sustainable minimisation and management of waste and resource consumption. The Bill will provide a statutory basis to the Waste Management Board, which will be responsible for providing independent advice on waste issues to the Minister for the Environment and Heritage, and for implementing the WAste 2020 Strategy. The Waste Management Bill will ensure a coordinated

approach across the state to maximise the recovery of waste resources, and will begin to establish requirements for extended producer responsibility of materials and wastes.

There is a need for consumers and producers to become more responsible for the life cycle of products and services. One key mechanism developing overseas for closing the loop is through requirements to extend a producer's responsibility beyond the point of sale of a product. This means that a producer is responsible for their products throughout their lifecycle.

At a national level a voluntary National Packaging Covenant has been established to reduce the amount of packaging being consumed in Australia. The Western Australian Government has prepared an action plan to implement the Covenant and will introduce the necessary regulations under the Environmental Protection Act.

Figure 8. Waste management hierarchy
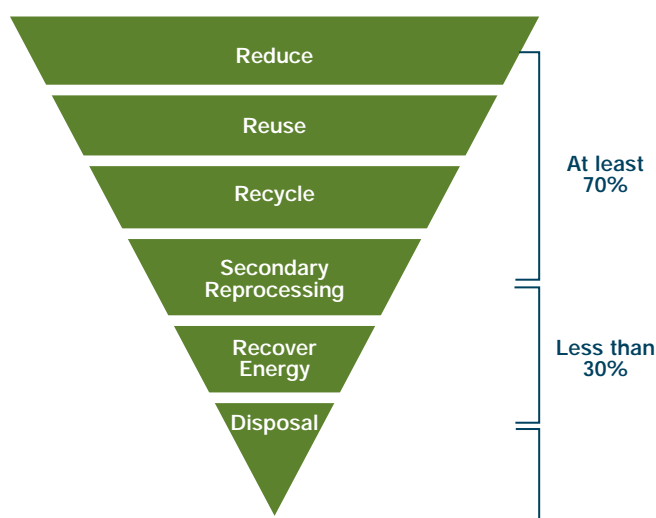
In short...

Vision

Waste is simply regarded as another resource.

Objectives

- Achieve the commitment and participation of all stakeholders in waste reduction, re-use and recycling practices and processes.

- Prevent the generation of waste.

- Maximise the recovery and recycling of resources from waste.

- Establish effective frameworks and structures to coordinate and facilitate waste reduction, re-use and recycling, the recovery of resources and the safe management of remaining wastes.

Actions underway include

- Implementing the WAste 2020 Strategy.

- Establishing the Waste Management Board.

- Developing a whole-of-government procurement policy for waste paper recycling.

- Conductiing research on solid waste management through the waste levy.

- Conducting the Parliamentary Inquiry into the Bellevue Chemical Fire and acting upon its recommendations including initiating a comprehensive review into hazardous waste management in Western Australia.

In short cont'd...

Proposted actions

4.41 Continue to work towards a zero waste society and recognise the success of those regional councils who are showing how this can be achieved.

4.42 Explore the opportunities for increased engagement in sustainable waste management by local government and the Waste Management Board through the State-Local Government Sustainability Roundtable.

4.43 Introduce and enact the Waste Management and Contaminated Sites Bills.

4.44 Require the Waste Management Board to prepare a detailed plan for each waste stream outlining how Western Australia will achieve the goal of zero waste.

4.45 Encourage the use of recycled products by all government agencies, and the recycling of paper, glass, plastics, metals and organic waste, as part of government's Sustainability Procurement Policy and Sustainability Code of Practice.

4.46 Require all Regional Organisations of Councils, or Local Government Authorities, to prepare waste management plans.

4.47 Examine how the Waste Management Board's waste levy can better reflect environmental and social costs of the environmental and social costs of waste disposal.

4.48 Encourage all government agencies to reduce consumption and waste by undertaking a comprehensive audit of resource consumption and waste and setting targets for reductions.

4.49 Set mandatory hazardous waste targets for hazardous waste facilities and target cleaner production programs towards industries producing hazardous waste.

4.50 Conduct a comprehensive review of hazardous waste reduction and management in WA to assess behavioural change programs, producer and consumer responsibilities, quantities and sources of hazardous waste, current procedures for transport, storage and disposal of hazardous waste to ensure international best practice. Emphasis should be placed on rail transport of all hazardous wastes. Importing of hazardous wastes from interstate or overseas will be prohibited.

4.51 Require the Resource Recovery Precinct Team to nominate and establish 5 resource recovery precincts for the metropolitan region in conjunction with community organisations and the Waste Management Board.

Indicators and targets

• Progress to achieving zero waste by 2020.

• Reduce resource consumption by a factor of 4 by 2020.

• Achieve at least 70% of the zero waste goal through reduction, reuse and recycling, and 30% through secondary waste reprocessing, in accordance with the waste management hierarchy.

• Establish five resource recovery precincts by 2010.

Global opportunities in waste management

Western Australia has developed a number of innovative waste management technologies and with strong regulatory controls on waste this innovation will continue. The Waste Management Fund will lead to on-going research and development to assist this process. Global opportunities are considerable.

Further information

Department of Environmental Protection 2001, *Waste 2020 TaskForce Report and Recommendations draft*, Department of, viewed August 2002, <http://www.environ.wa.gov.au/downloads/WAste_2020/Controlled_Waste.pdf>

Murdoch University, Environmental Technology Centre, <http://wwwies.murdoch.edu.au/etc/ >

> OUR WATER FUTURE

The sustainability of our water supply is an issue of concern to many Western Australians, especially those who live in the South West. There is a need to provide a vision for the future, new sources of supply and new ways to save water.
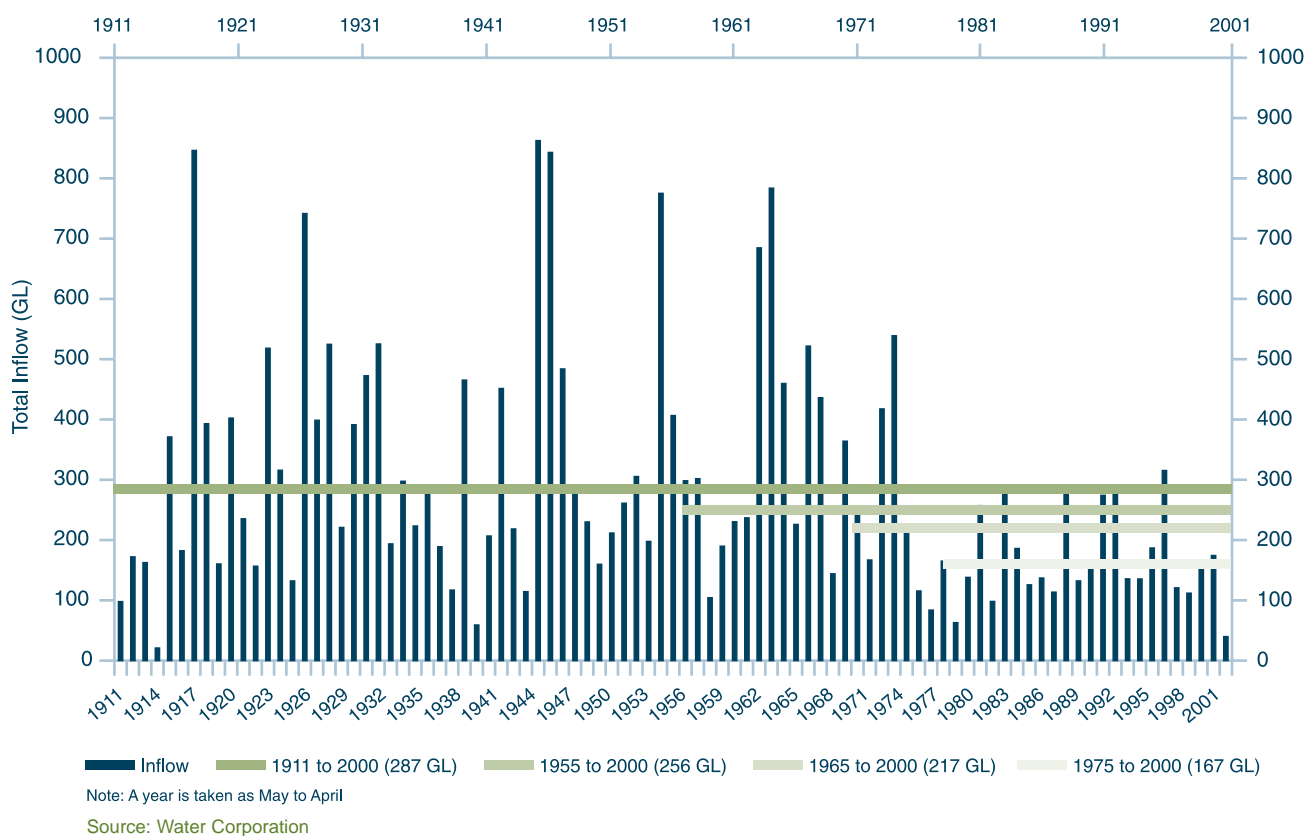
Effectively managing water supplies is a key task for our state. It requires thorough investigation into the options, and commitment to tough choices and actions where necessary. We must ensure we have enough water to meet our needs.

Meeting the challenge of creating and securing a sustainable water future for Western Australia is a high priority for Government and is a unique opportunity for us to work together in achieving this goal.

Hon Geoff Gallop, Premier of Western Australia[36]

Water supply is a major issue in the South West of Western Australia with a 50% decline in the run off to dams being experienced in the past 25 years (see Figure 9).

Figure 9 Yearly Streamflow for Major Surface Water Sources (Perth Water Supply System)

Inflow ▬ 1911 to 2000 (287 GL) ▬ 1955 to 2000 (256 GL) ▬ 1965 to 2000 (217 GL) ▬ 1975 to 2000 (167 GL)

Note: A year is taken as May to April

Source: Water Corporation

Perth people have also increased their water use so that it has reached higher levels than in other Australian cities where demand has been falling or has remained steady, though they also demonstrated in the past summer how they can save water with a 25% reduction in water use. The 2001-02 drought resulted in 30Gl runoff compared to the recent average of 160 Gl (or the long term average of 320Gl). Climate change experts predict that the likelihood of low rainfall into the future is high.

The Premier established a Water Taskforce in April 2002 to investigate short and long-term solutions and to produce a State Water Strategy with widespread public consultation. This draft State Sustainability Strategy provides some interim solutions and suggestions that can be debated as part of that process along with the newly released draft of the State Water Conservation Strategy.

[36] Hon Geoff Gallop, Government of Western Australia, *Our Water Future: Its up to all of us*, 2002

Possible actions that are likely to have significant sustainability outcomes as well as helping solve the water problem include:

- Household oriented water management systems such as:

  - water wise gardens that have native plants and provide habitat for native birds and invertebrates and help in the development of a local - 'sense of place'.

  - Grey water that can be recycled into gardens providing nutrients and water for plants rather than into the ocean.

  - More efficient appliances for water usually also save energy.

- Water sensitive urban design that can contribute to the aesthetic of an area. In addition in some urban areas the water table is quite high, providing opportunities for bores, and community gardens as well as increased use of rain water tanks.

- Reuse of wastewater that can provide an assured supply to industry while saving scheme water and reducing waste into Cockburn Sound.

- Water supply options, such as revegetating the Gnangara Pine plantation with less water intensive plants, the desalination of salty water in the Wheatbelt that can prevent land degradation as well as provide water and desalination of sea water using wind power.

All of the above concepts enable us to turn the water crisis into an opportunity for sustainability at the local level and through the technologies and services developed, a global sustainability opportunity.

The government is holding seventeen community water forums that will coincide with the public consultation phase of the draft State Sustainability Strategy. The results of these and the development of the State Water Strategy will be included in the final State Sustainability Strategy.

In short...

Vision

Water is used with care and is provided sustainably to meet needs.

Objectives

- Reduce water consumption.
- Extend responsibility for water supply to the planning system (water sensitive when design) and to local government (Regional Councils) for groundwater supplies.
- Achieve significant waste water reuse.
- Investigate long term innovative water supply options that have broad sustainability outcomes.

Actions underway include

- The Premier's Water Taskforce has been established to develop a State Water Strategy.
- A draft State Water Conservation Strategy has been released for public comment.
- A draft Guidelines for the Re-use of grey water by households has been released.
- Government is holding seventeen community Water Forums throughout the State.
- The Water Corporation and Department of Environment, Water and Catchment Protection operate a number of programs directed at water conservation.

In short cont'd...

Proposed actions

4.52 Complete the State Water Strategy after full public consultation including a major public Water Symposium to set out a cost effective supply strategy, a conservation strategy and a research strategy for the long-term.

4.53 Establish initiatives to achieve a 10% reduction in per capita water use by 2012.

4.54 Establish guidelines for household use of grey water and encourage best practice in their application.

4.55 Develop partnerships with local government to ensure water sensitive urban design is built into all urban development.

4.56 Ensure local government and Regional Councils, co-ordinated by the Department of Environment Water and Catchment Protection, take more responsibility for managing groundwater, including household and municipal bores and storm water collection, through the development of Regional Groundwater Management Plans.

4.57 Construct the Kwinana waste water reuse facility with industry partners moving towards achieving in 10 years 20% waste water reuse and set out a long term plan for how all waste water could be reused.

4.58 Examine the potential for individualised marketing of water conservation and water supply options including rainwater tanks, bore and grey water systems.

Indicators and targets

- Annual water consumption per capita reduced from 170kl to 155kl by 2012.
- 20% recycling of waste water by 2012.
- Regional Council ground water management plans in place for metropolitan Perth by 2012.

Global opportunities in sustainable water

Other areas of the world have water constraints like Perth. If the city can overcome these in a sustainable way then the results will be seen globally.

Further information

Water Corporation

> **SUSTAINABLE ENERGY**

The use of household electricity and gas, renewable fuels, transport fuels, commercial and industrial fuels are all opportunities for addressing sustainability through providing an efficient service to the economy, helping build communities and not harming the environment.

In addition to world coal use peaking in 1996, oil production is expected to peak either in this decade or the next. Natural gas use will keep expanding somewhat longer because of its generous reserves and its popularity as a clean-burning, carbon-efficient fuel. Because it is a gas, it is also the ideal fuel for the transition from a carbon-based economy to one based on hydrogen.

Lester Brown[37]

The need for sustainable energy is about the transition from fossil fuels to renewable energy sources, including wind, waves, solar photo-voltaic, solar thermal (such as solar water heaters), geothermal and various biomass based fuels, (such as bio-diesel).

Throughout the world there have been experiments and demonstrations of how to manage this transition. In Western Australia there are globally significant experiments and demonstrations in renewable energy technologies[38] including:

• solar water heating (Western Australia has led the world in this technology)

• remote area power systems that use solar photovoltaic and wind turbins combined with diesel generators for small, isolated communities[11]

• the Albany wind farm uses world best practice technology and operational systems

• the new 1 MW power plant at Narrogin will use oil mallee biomass and is a globally significant attempt to bring multiple sustainability benefits to rural Western Australia

• the hydrogen fuel cell bus project.

The Western Australian Government created the Sustainable Energy Development Office in recognition of the need to facilitate the transition to sustainable energy. The Office has a mandate to advise government on all policies in this area and to provide information and assistance regarding sustainable energy to business, government and the community.

BOX 28   GEOTHERMAL-BASED HEATING AND COOLING AT EDITH COWAN UNIVERSITY, JOONDALUP

The new Ecology and Health building at the Joondalup campus of Edith Cowan University is an eco-design that utilises geothermal energy. A deep bore provides hot water which provides air conditioning for the building and all other buildings on the campus through a heat exchanger.

Source: Edith Cowan University

There are a number of important initiatives occurring within the energy portfolio that have the potential to help move Western Australia towards more sustainable energy use. These include:

• Western Power's South West Integrated System (SWIS) Power Procurement Process which is designed to produce power at lower cost and with more sustainable outcomes.

• The Electricity Reform Taskforce which is designed to examine institutional aspects of electricity provision and which can enable greater renewable energy in the system.

• The West Kimberley power procurement process.

Moving towards a more sustainable energy base for our society has almost universal agreement as it has the potential to reduce greenhouse gases, other air emissions and pollutants from fossil fuel use and other external costs. This needs to be done in ways that are economically efficient and socially beneficial.

Many other parts of the world have significantly higher proportions of renewable energy and have instigated large-scale energy management programs. But each place has its own potential, its advantages and its problems. For example, in milder areas like the South West of Western Australia, energy use for household heating and cooling is much lower than in areas with extreme temperatures, but there is still much potential for energy savings.

The innovations in Western Australia were listed above and programs to expand the efficiency of the generation system and the amount of renewable energy are under consideration. Strategies to ensure a more active attention to sustainable energy are linked to a number of other policy areas in this Strategy. They include the Greenhouse Strategy, the Oil Vulnerability Strategy, the Land Use-Transport Integration and Balanced Transport Strategy, the Freight and Regional Transport Strategy, the Air Quality Strategy, the Sustainable Building and Construction Strategy, and strategies designed to increase community as well as strategies for business. Proposed actions from each of these areas as well as additional strategies have been listed here to bring renewable energy more rapidly into the energy system in Western Australia.

In short...

Vision

Western Australia's transition to a sustainable energy future is globally innovative and locally responsible.

Objectives

- Ensure energy efficiency and renewable energy are an increasing part of the domestic, commercial and industrial sectors.
- Demonstrate the multiple sustainability benefits of more sustainable energy.

Actions underway include

- Western Power's increased use of gas and improved efficiency in electricity production has had benefits in more sustainable electricity generation.
- Western Power's wind power initiatives and other projects have demonstrated the relevance and potential of renewable energy technology.
- The establishment of the Sustainable Energy Development Office is assisting in creating significant opportunities for innovation in sustainable energy.

Strategies for sustainability

4.59   Develop further voluntary schemes with the housing industry to demonstrate at least 4 star energy rating on all new homes and move to a more mandatory scheme through a Guide to Sustainable, Planning, Building and Construction developed with local government and industry (see *Building sustainably*).

4.60   Develop a rating scheme for all home renovations that provides incentives for renovators who adopt certified energy efficient renovations.

4.61   Ensure Town Planning Schemes require solar orientation of new developments to achieve 80% oriented houses, and provides guidance on the re-orientation principles as part of all renovation approvals (see *Building sustainably*)

4.62   Encourage building design and management for energy efficiency for all government buildings.

4.63   Provide Eco-Loans as part of the existing KeyStart program with a requirement to save energy through the design and construction of the home.

In short cont'd...

4.64 Demonstrate government leadership in sustainable energy through Sustainability Action Plans.

4.65 Continue trialling innovations in transport fuels including gas, hydrogen fuel cells and biodiesel demonstrations.

4.66 Develop a State BioEnergy Policy.

4.67 Develop new initiatives to manage peak load demand.

4.68 Provide mechanisms in the electricity market structure for encouraging renewable energy and distributed generation which could include incentives to reduce line losses and providing priority dispatch for renewable energy in any trading market.

4.69 In meeting the Mandatory Renewable Energy Target investigate the scope for mechanisms to ensure that Renewable Energy Certificates are sourced locally.

4.70 Continue to support the use of renewable energy in Remote Area Power Supply (RAPS) systems.

4.71 Seek to minimise energy use by:

- household energy conservation information programs
- school curricula and management to demonstrate energy efficiency
- supporting mandatory national standards for energy efficiency in appliances and vehicles
- ensuring government procurement is based on life-cycle costing to properly account for the cost of energy
- using sustainability assessment to include life-cycle analyses on all such decisions.

Measuring progress

- Primary energy use per unit of Gross State Product.
- Amount and proportion of renewable energy use in Western Australia.
- Household energy use per unit of household income.

Global opportunities in sustainable energy

The world is in a very rapid phase of competitive development of sustainable energy solutions.

Further information

Carlton, J 2002, *Wind Energy in Western Australia*, sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/windenergy/windenergy.htm>

Combes, D 2002, *Gas as a Transition Fuel: Western Australia's Natural Alternative*, sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/gasastranstion/gasastransition.htm>

Garrity, L 2002, *Hydrogen Fuel Cell Buses: The Future for Sustainable Transportation in Western Australia and Around the World*, sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/Hydrogen.htm>

Passey, R 2002, *Biodiesel: A Fuel for the Future*, sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/biodiesel/biodiesel.htm>

Stanton-Hicks, E 2002, *Oil Mallees: Native Flora with Myriad Benefits*, sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/OilMallee/OilMallee.htm>

Cool Communities program <http://www.coolcommunities.org>

Electricity Reform Task Force <http://www.ertf.energy.wa.gov.au>

Sustainable Energy Development Office <http://www.sedo.energy.wa.gov.au>

Western Power <http://www.westernpower.com.au>

> PRESERVING CULTURAL HERITAGE, LANDSCAPES AND CREATING 'SENSE OF PLACE'

Western Australians have long been considered a group of people with a strong sense of local identity, who feel proud of their state and who prefer to live here rather than any other part of Australia. It is a state with a beautiful coastline, clean and orderly cities and towns. The Western Australian Government recognises that 'sense of place' is important in the psyche of Western Australians. Maintaining and building on this sense of place will contribute to sustainability by fostering a spirit of pride and optimism that will contribute to innovation and creative problem solving.

Cultural landscapes are … considered to be about people gaining and maintaining a 'sense of place' in their community, and people in a place feeling confident in that place. Our recognition of a site as being pleasant or important is a first step in planning how it can be preserved and managed for the enjoyment of people.

Coral Pepper, *Discussion Paper - Sustainability of Cultural Heritage and Landscapes.*
Background Paper for the State Sustainability Strategy.

Over the years, however, there has been an erosion of the very values that informed these views, as the impacts of western-style development have manifested. The feelings of loss within the community have been mixed with feelings of powerlessness. These feelings reduce the capacity of individuals and the community as a whole to participate in, and contribute to solutions. This is a factor of vital concern in any discussion of sustainability.

A term often used to describe this sense of belonging, of attachment to and ownership of particular places, is 'sense of place.' The loss of a 'sense of place' within sectors of the community is a factor of vital concern in this discussion of sustainability of cultural heritage and landscapes (see Box 29).

Our cultural heritage is what we pass on to future generations and it is expressed in how we build and how we shape our landscapes. Beautiful and culturally significant buildings, townscapes and landscapes are preserved because we feel they are important expressions of who we are. The protection of cultural heritage and landscapes is a fundamental means of creating and maintaining a 'sense of place'.

Many factors can contribute to a sense of place. For example, a good knowledge of the geography of the area or region in which people live and of the state as a whole. People should feel free to move around and interact with others in the streetscapes and landscapes with which they are familiar. They converse freely with others about travels, and have some picture in their mind's eye of the places being described.

A sense of place can be generated by a familiarity with and fondness for particular streetscapes and landscapes across a range of scales, from the local precinct to a region to the whole of the state. Invariably the streetscapes are not dominant and overpowering–the buildings are on a human scale. And the landscapes do not feel threatening; they are vegetated with familiar plants and contain familiar animals.

Good relationships with other members of the local community including neighbours and near-neighbours and even local shop keepers engender a sense of being part of a community, with all the potential for support that this creates, especially for young people as they grow up.

Much can be done to facilitate the sense of place through a range of infrastructure improvements to minimise car use and maximise walking and cycling in a local area. However the social infrastructure of a community is also critical through various community services and the local expressions of culture and the arts, especially Indigenous arts (see *Sustainability and community: Sustainability through culture and the arts*). The local planning system can be a powerful mechanism for facilitating sense of place'. Heritage regulation in the past has been seen as an impediment to the economy just as environmental regulation once was. However, there are now many examples to demonstrate that once heritage values have been preserved in buildings (like the Fremantle

Arts centre) townscapes (like Fremantle or Subiaco or many other inner city areas) and landscapes (like the Swan Valley or the Hills), the economy and the community has benefited.

BOX 29 THE KOJONUP RECONCILIATION CENTRE: 'KODJA PLACE'[39]

An outstanding example of how a local community has strengthened the 'sense of place' within that community is the town of Kojonup's recently established Reconciliation Centre. This centre is named 'Kodja Place' after the stone axes that local Aboriginal people used in the past. The Centre has been planned and constructed as a combined reconciliation and community based project where a combination of facilities is provided for all members of the community to access.

Resources are being gathered to demonstrate the development of the town and the landscapes through to the present day within the museum and multi-media laboratory. The laboratory provides the facilities for interested members of the community to scan family photos and to blend them with scenes of the evolving townscape and landscapes to create videos that best represent their own life stories in and around Kojonup. The process of describing these stories will undoubtedly strengthen and enliven the sense of place.

Since its opening in April 2002, the multi-media laboratory has been used extensively by a broad cross-section of the community. Members of the community are working together so that capacity building is occurring within the community. Further, it seems that younger members of the community who formerly felt dispossessed are now finding their place.

There has been in recent times, something of a reaction to heritage because of concerns about individual property rights issues. At the same time, it is clear that residents of most of the older, established suburbs prefer the existing style and ambience of those suburbs and are not keen for these areas to be redeveloped with different architectural styles. A useful approach to dealing with these apparently conflicting issues is for residents of local precincts to develop guidelines for planning and development for their precinct that identify, protect and enhance the essential character of the precinct and identify opportunities for redevelopment. This has been the characteristic approach of successful heritage areas where development is facilitated by the guidelines and the heritage qualities become part of the full triple bottom line advantages to living or working in such places.

The integration of the social component of sustainability into economic and environmental considerations is never more obvious and necessary than in the careful consideration and protection of heritage. Transparency and engagement are essential to the proper development and acceptance of 'sense of place'.

Finally, it is important in discussing heritage and sense of place issues to emphasise the importance of Perth's city centre and other urban centres such as Fremantle, Bunbury and Geraldton. City centres are an expression of who we are. They are the soul of the city as they represent in the style of their architecture, their public spaces and their level of human interest and creativity, what the underlying values and priorities of the community are. They are in simple terms the physical expression of our economic health, our environmental sensitivity and our cultural and community values. They are sustainability profiles or indicators.

It is therefore important for us to focus attention on the city centre of Perth as well as Fremantle, other sub-centres in Perth, and regional town centres. These centres need a vision as to how they can become more sustainable, more interesting and attractive places to visit as well as to live and work in. They need to have cultural and architectural features that represent the community and its aspirations. They need community art and they need high culture as both are part of who we are.

The Future Perth program has had an important new element in its planning process by incorporating a paper on *The Creative City* by British author and consultant Charles Landry[40].

[39] Pepper, C. 2002. *Sustainability of Cultural Heritage and Landscapes.* Background Paper for the State Sustainability Strategy.

[40] C Landry, *Can Perth be more creative?,* Future Perth Working Paper.

In short…

Vision

Western Australia's special qualities in landscapes and townscape are valued and enhanced in all development.

Objective

Instil a strong sense of place in Western Australians through the preservation of cultural heritage and landscapes and the active development of quality public spaces.

Actions underway include

- The development of the multi-media laboratory and the use of it by members of the Kojonup community is an outstanding example of local activity leading to development of a strong sense of community.
- Fremantle is an example of a success story in the maintenance of urban heritage (see case study).
- Active involvement of the state and local governments in public spaces and community art in city centres.
- The Heritage Council and WALGA are working on a more standardised and consistent approach to municipal heritage inventories.

Proposed actions

4.72 Support Regional Sustainability Strategies as opportunities to develop 'sense of place' stories. This will provide opportunities for communities to document their own stories of place within their communities and landscapes so that the stories are not lost but are enlivened, for example, Kojonup's 'Kodja Place'.

4.73 Encourage local government's implementation of heritage to be consistent, transparent and builds on precinct plans that establish guidelines for how to protect and enhance the essential character of their area whilst allowing for sympathetic infill and redevelopment.

4.74 Provide opportunities for students to learn about their natural and cultural environments and their local histories.

4.75 Support opportunities for Indigenous people to promote cultural awareness within their own communities.

4.76 Develop a Built Environment Policy that focuses attention on Western Australia's architectural features that reflect our 'sense of place'.

4.77 Develop a Creative City Policy as part of *Future Perth* to ensure that community values are expressed creatively in the city centre and other centres.

Indicators and targets

Number of town planning schemes with zones and guidelines for cultural heritage and landscapes.

Global opportunities

Although needed most at local level, the principles and practices of cultural heritage can be applied everywhere.

Further information

Rebbettes, D 2002, Fremantle: *Thriving Economically through an Urban Heritage Focus*, sustainability case study, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/Fremantle%20Heritage/fremantle heritage.htm>

Pepper, C 2002, *Sustainability of Cultural Heritage and Landscapes*, sustainability background paper, Draft State Sustainability Strategy CD-ROM, Department of the Premier and Cabinet, Perth.

> **BUILDING SUSTAINABLY**

Sustainable construction would result in buildings that are simultaneously less resource-intensive and provide a better environment in which to live and work. The Western Australian Government has a number of initiatives that share this goal including the Greenhouse Strategy, Future Perth, the State Planning Strategy, the State Housing Policy and the Built Environment Policy.

The pursuit of sustainable development brings the built environment and the construction industry into sharp relief. This sector of society is of such vital innate importance that most other industrial activities in the world simply fade in comparison.

Confederation of International Contractors' Associations[41]

In every country, the construction industry is both a major contributor to socio-economic development and a major user of energy and natural resources; therefore its involvement is essential to achieve sustainable development in our society.

United Nations Environment Program[42]

The benefits of designing sustainable homes and buildings are well understood. However, sustainable building also requires a sympathetic planning system and an enthusiastic market. Dispelling any myths or scepticism that industry or the public may have would require the efforts of government in partnership with key stakeholders to achieve a smooth and comprehensive transition.

Planning for building development, especially residential planning, requires rethinking the existing approvals process to explicitly support sustainable building guidelines in terms of placement, access, shape and orientation. This would give building designers a huge boost in delivering a passive solar, energy efficient, accessible and more liveable environment (see Box 30 and 31). Arguably appropriate improvements in the approvals process that support passive solar design could deliver a built product with no or minimal capital cost increases.

Building materials should be manufactured, produced and supplied within the framework of sustainability. This will require increasing effort to develop guidelines for manufacturers and for the building and construction industry. A key issue for government in creating a comprehensive sustainable building materials catalogue would be in enlisting and supporting private industries to develop their own environmental management systems. This could be achieved in partnership with industry peak bodies such as Royal Australian Institute of Architects, Housing Industry Association and the Master Builders Association.

Building and construction of sustainable homes requires an understanding of the impacts of construction methods and resource use by the builder and contractor. Specific training and short courses for builders in site and construction impacts, environmental management, (including waste minimisation and recycling) could be provided through TAFE colleges and industry based training programmes.

Education for the public on all aspects of sustainability is essential to successful implementation. The residential home is an excellent vehicle for understanding what sustainable living is and how to change attitudes and behaviour. The development of a comprehensive 'sustainable home living package' that addresses the key elements of sustainability that homeowners can adopt would be beneficial. This sustainable home living package should build on and support the Cool Communities initiative.

[41] Confederation of International Contractors' Associations, *Industry as a partner for sustainable development: construction*, Confederation of International Contractors' Associations and United Nations Environment Programme, United Kingdom, 2002, p. 7.

[42] United Nations Environment Program, *Energy and Cities: Sustainable Building and Construction*, International Environmental Technology Centre, Japan, 2000, viewed 15 August 2002, <http://www.unep.or.jp/ietc/Focus/Sustainable_bldg1.asp>

BOX 30   PLANNING FOR INCLUSIVE COMMUNITIES.

People with disabilities consistently report that, because of inappropriate planning, they are unable to enter public buildings and facilities to use the services available within these buildings.

Currently 19.5% of the population, or approximately one in five people in Western Australia, have a disability. While people may have a disability at any age, the likelihood of having a disability increases significantly as people get older. As our community ages it is predicted that the number of people with disabilities will significantly increase.

These changing demographics and increased community awareness has led to the introduction by both the Commonwealth and state governments legislation that recognises that people with disabilities have the same rights as other citizens, including access to premises.

It is being increasingly recognised that good access also benefits business and the overall economy as well as people with disabilities, their families, friends and carers. It is an important factor in the achievement of sustainable communities. Indeed inclusion of people with disabilities has become a 'touchstone' indicator of whether the 'human' component of sustainability has been included in development.

In response to a need for technical information identified by the design and construction industries, the Disability Services Commission formed a reference group that produced the resource manual 'Buildings-A Guide to Access Requirements.'

An accompanying pamphlet was also produced for local governments to distribute at the time a planning or building permit is requested. The manual, which is freely available from the Commission's website <www.dsc.wa.gov.au> was purchased by the Building Designer's Association for each of its members.

BOX 31   ATWELL SOUTH SCHOOL - A SUSTAINABLE DESIGN FOR A SUSTAINABLE SUBURB

The Department of Education has commissioned a 'sustainable' school to be built at South Atwell, 35km south of Perth in the City of Cockburn. South Atwell is a new subdivision that is being developed along the sustainable construction principles of 'Liveable Neighbourhoods' with solar orientation and 'GreenSmart' buildings. It will be adjacent to the new southern railway.

The South Atwell Primary School will be the first government school in Western Australia that aims to develop some of the key principles of sustainable building and construction. This project will push the benchmark for future developments and will provide a valuable test case study for environmental technologies and the involvement of sustainability in the curriculum through the school building and school grounds.

Although still in the pre-design stage, the key sustainability components that this school aims to incorporate include:

• Energy efficiency and some use of renewable energy.

• Transport efficiency; development of clean transport options.

• Water efficiency and reduced offsite waste water treatment.

• Landscaping with native species to moderate the micro-climate and for low water use.

• Materials sourced from local, recycled, and low impact sources.

• Construction waste management and low site impact.

• Waste management and composting.

• Low allergen, low emission materials and ventilation systems.

The South Atwell Primary School provides a great opportunity to develop sustainable institutional facilities and public spaces. Being such a highly visible site its success will do much to promote and enhance what the future of building and construction.

In short cont'd...

Vision

Innovations in sustainable building and construction rapidly become mainstream.

Objective

- Encourage the widespread adoption of sustainable building and construction.

Actions underway include

- The Housing Industry Association provides the Greensmart Accreditation Program.
- The Housing Industry of Australia's GreenSmart Program for sustainable building and construction is being used in projects such as Atwell South, Leda and Brighton as well as new areas of Ellenbrook.
- The Department of Education's new primary school at Atwell South will be a model eco-school built to sustainability principles.
- The Liveable Neighbourhoods Code.

Proposed actions

4.78 Promote a voluntary 4 star energy rating on all new homes.

4.79 Produce a Sustainable Planning, Building and Construction Guide through the State-Local Government Sustainability Roundtable and in close consultation with industry stakeholders.

4.80 Progressively incorporate the principles of the Sustainable Planning, Building and Construction Guide into relevant state government documents such as a Statement of Planning Policy, the Building Codes, the Design Codes, R-codes and local town planning schemes.

4.81 Work to ensure all government housing and construction occurs within the Sustainable Planning, Building and Construction Guide.

4.82 Continue to provide incentives for sustainable building and construction including renovation.

Indicators and targets

Proportion of new homes being built and renovations conducted according to sustainability guidelines.

Global opportunities

The building industry globally is looking for innovation in sustainability. The United Nations Environment Program through the Environmental Technology Centre at Murdoch University has established a Co-operation Centre that is primarily aimed at bringing sustainability innovations in building and construction to the Asia-Pacific Region. This is typical of the opportunities for Western Australian firms to be involved in this rapidly growing market.

In short cont'd...

Further information

Beyer, D 2002, *Sustainable Building and Construction: Initiatives and Regulatory Options towards a Sustainable Planning*, *Building, Design and Construction Sector in Western Australia*, sustainability background paper, Draft State Sustainability Strategy CD-ROM, Department of the Premier and Cabinet, Perth. 2002,

Beyer, D 2002, *Pinakarri Community: An Intentional Co-Housing Cooperative*, sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/pinakarri/PinakarriCommunity.htm>

Bourne, M 2002, *Piney Lakes Environmental Education Centre: an Innovative Project with Multiple Benefits*, sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/PineyLakes/pineylakes.htm>

Hart, R 2002, *Housing of the Future: Ellenbrook Solar Housing*, sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/Ellenbrook/ellenbrookhousing.htm>

7 Sustainability and community

Vision for Western Australia

Western Australian communities in cities and in regions have a strong sense of place, are inclusive of all citizens and have supportive networks receptive to local needs, and through this can respond uniquely to the sustainability agenda.

Goal

Support communities to fully participate in achieving a sustainable future.

Priority areas for action

A strong case has been made in this draft Strategy to better integrate the social dimension of development and human activity into sustainability. The most fundamental concept behind social development is the importance of community.

This section gathers together core issues that focus on the social and that enhance our sense of community.

The rationale as to why community is so important to sustainability and to all of our lives, is set out in Figure 10 below showing the roles and functions of government, the market and community.

Figure 10. The interconnection of community, government and the market.
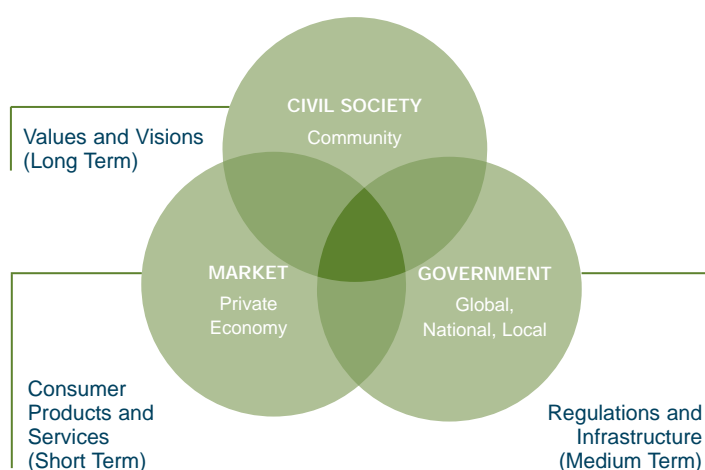
The primary function of government is to provide regulation and infrastructure, the market's function is to provide goods and services–but neither of these is about the direction and purpose of development. The community is the major provider of the values and visions for the future. This section will follow through on the values and visions set by the community and will emphasis the importance of finding partnerships that enable a true interconnection between government, market and civil society. The section will focus on what sustainability could mean for health, housing, education, the arts and multiculturalism.

[43] L Barron and E Gauntlett, *Housing and Sustainable Communities Indicators Project - Consultation Paper,* Western Australian Council of Social Services, Perth, 2002.

There are a range of government agencies with responsibility for community related services. The primary interest and focus of most of these agencies is the social dimension of sustainability. Their submissions and those of the community with interests in this area, concentrated on how 'the social' can be linked to economic and environmental processes.

The general sustainability implementation model established in *Sustainable use of natural resources* and *Sustainability and settlements* also appears to be relevant to the community with some important provisos. These relate to the necessity to be fine-grained, local community oriented and bottom-up. The State-Local Government Roundtable will consider how Regional Councils can assist with issues related to Indigenous people, health, education, justice, disability services, community welfare, housing and the arts. In each region there will be special needs and the issues will overlap. It is proposed that a mechanism to implement social sustainability be developed through Regional Councils or local governments based on the need for a greater degree of integration and co-location of services.

Social and community issues are considered throughout this draft Strategy. In this part, however, particular attention is focussed on the provision of socially sustainable housing, how to develop and sustain healthy communities and the importance of formal and non-formal education in raising community awareness of sustainability.

Also considered is the role that the arts and culture can play in raising community awareness and interest in sustainability. Culture and the arts provide the community with its creative edge needed to face the new and potentially difficult problems of sustainability, to find the ethics which underlie every element and every issue in sustainability. Multiculturalism provides the opportunity for different answers to be found and to build a whole of community approach to sustainability.

Together each of these issues form the basis of how the community can be motivated for sustainability reform.

> COMMUNITY SERVICES AND DEVELOPMENT

Community is critical to how we live and how we feel about the future. Strong communities are more sustainable in themselves and are able to contribute to sustainability in general.

Social interactions affect what happens in the economic and environmental spheres. Promoting social sustainability therefore promotes sustainability overall and vice versa.

Western Australian Council of Social Services

Government agencies involved in the delivery of community services include the Departments of Housing, Police, Health, Education, Training, Disability Services, Community Development, Justice, Indigenous Affairs, Local Government and Regional Development, Planning and Infrastructure and Sport and Recreation. It is contended in this draft Strategy that their services can be better coordinated to meet community needs and assist with the development of our 'social capital'.

'Social capital' is an important concept for the State Sustainability Strategy. It is about the extended networks that link us together in our communities. It measures the sense that people are involved in the immediate society within which they live and work and over which they are, or can be, empowered to be involved. Participation and the ability to access information are two vital attributes in this regard[44].

Sustainability can be understood in terms of the relationship between financial capital, natural capital (the biodiversity and ecological integrity of an area) and social capital. Each has intrinsic worth and influences the other. Not only is social capital important in determining how people value and enjoy their community, but it also contributes to an informed and participative community (which is best placed to enhance financial and natural capital).

In turn, the state of financial and natural capital influences social capital since only the most resilient communities can function effectively where there is significant financial disadvantage or a degraded natural environment. Understanding how to improve social, natural and financial capital in an integrated way is one of the central challenges of this draft Strategy.

Sustainability through social capital improvement can be conceived through a number of community centred ideas[45] including sustainable communities, community strength, resilient communities, community development, healthy communities and community capacity (see Boxes 32, 33 and 34).[46]

A focus on sustainable community should also support the resilience and capacity at critical life stages. This can mean the development of skills and resilience in the early years, the integration and acceptance of young people, support to families in their important social role, and facilitation of the continuing involvement of seniors in the Western Australian community. It can also include an ongoing commitment to the support of volunteers, the foundation of community-based organisations.

[44] For a comprehensive overview to these issues, see the Western Australian Council for Social Services' submission to the State Sustainability Strategy, April 2002 and the background paper by Kerry Stoll *Youth and Sustainability: Social Capital, Social Entrepreneurship and Youth Civic Engagement.*

[45] Community can refer to both geographical communities and communities of common interest. Moreover people can be simultaneously involved in a number of different communities and move between them over a short period of time. To actively enhance communities also requires an understanding of what people perceive as their community.

[46] Barron, L and Gauntlett, E. *Housing and Sustainable Communities Indicator Project* - Consultation Paper, WACOSS, December 2001.

BOX 32   THE KALGOORLIE PROJECT

Capacity building and community partnerships are key ingredients of this project, which was established to address youth crime in Kalgoorlie-Boulder. The project has set out to achieve a strong local commitment to reduce youth crime and boost pro-social development through a strong collaborative approach. Starting out by identifying factors that influence a child to engage in crime, the process includes community consultation, engagement and ownership of the issues.

All members of the community with a stake in youth have been mobilised to help establish a shared vision and shared priorities for action. The process undertaken has focused on long-term solutions and the implementation of sustainable strategies.

While it is at the local government level that local communities and government most directly interact, at the state level responsibility for engaging Western Australians with the development and strengthening of their communities rests with the Department for Community Development. The range of services, programs and initiatives undertaken by the Department are numerous.

BOX 33   COMMUNITY DEVELOPMENT IN THE PEEL REGION

The Peel Development Commission in its report entitled 'Peeling Away the Mask' identified a range of challenges facing this rapidly growing region. Its report clearly showed how difficult it is to build sustainable communities when the balance is not maintained between economic, environmental and social bottom line outcomes.

In the case of the Peel region, less real economic growth had led to a number of undesirable social outcomes including low retention rates at high school, high youth unemployment rates and a large commuting workforce to Perth, all of which have had a significant impact on the community and its ability to build a sustainable future.

Key stakeholders from both the community and government are now working to address these emerging issues, effectively diverting resources and evolving a more sustainable model for the community. Principles pertaining to community development, capacity building and community regeneration have all been employed. As in work also carried out by the City of Gosnells, one of the many tangible outcomes to date has been the crime prevention benefits, a result of community development and capacity building within the Peel community.

Overall, the aims of these programs and services are threefold:

- to strengthen communities so that individuals and families are able to meet their own needs, achieve self reliance and contribute to their own solutions

- promote a just and equitable community enriched by diversity and increased social participation

- support families and communities to provide for the care and safety of their members.

In the community sector the Western Australian Council for Social Services (the community service umbrella organization in Western Australia), has undertaken an extensive body of research and work into social sustainability and how it can relate to the Western Australian community. This includes the development of a model of social sustainability centering around five principles and 36 characteristics. Their work on social assessment should be of interest when developing sustainability assessment methodologies in Western Australia.

BOX 34   NETWORKED NEIGHBOURHOODS

Networks achieved and nourished by electronic communication can facilitate community development.

The Neighbourhood Network program run from the Department of Industry and Technology is a world first. The project is being trialled in Picton Waters, Bunbury, and will be facilitated by a $2,500 package provided to each household by the developer of the area, Pindan. This money will enable each household to have a computer and fast (broad band) Internet access from which a community electronic network can be created.

The project provides a mechanism for each person in the Picton Waters estate to link up with likeminded people both immediately within and outside their community, so as to create communities of interest. It will also connect them with local businesses, government information of interest to them and local community associations.

The software is being developed in partnership with Microsoft and may be able to make a major global contribution to community network software. It follows the instructions entered by each householder and constantly updates and provides the information asked for by each householder. Register, for example, that you are interested in playing tennis and someone from a local tennis club will get back to you with relevant contact names and information. Similarly, finding out who can deliver the newspaper or milk is 'a click' away.

Sustainability requires a 'grass roots' upwards community development process that avoids the 'darker side' of community'-exclusion, elitism, polarisation and cliques.[47] In this regard the Western Australian Council of Social Services argue the importance of establishing processes that, among other things:

- support a diverse range of people to participate in all decisions and processes

- build capacity at the local level

- are based on collaboration and partnerships

- support local solutions and initiatives

- incorporate formal and informal interactions.[48]

[47] Anna Carr *Grass Roots and Green Tape* (Federation Press Sydney 2002) p. 18

[48] Western Australian Council for Social Services' submission the State Sustainability Strategy p.16

The government will establish Regional Integrated Community Service Plans that:

- examine the various community needs of each region,

- assess the relevance of various programs and services available,

- show how they are linked to the other economic and environmental issues of their area, and

- suggest how and where services could be co-located to improve their integration and relevance.

This Policy on Regional Integrated Community Services will be developed with the close involvement of the Departments of Education, Training, Health, Disability Services, Housing and Works, Community Development, Indigenous Affairs, Justice, Local Government and Regional Development, Planning and Infrastructure and Sport and Recreation.

These Regional Integrated Community Services Plans may form the basis of a Statement of Planning Policy that can be applied to each local government Town Plan. These Plans should assist with the integration and relevance of government services, articulate a vision and get detailed planning underway, achieving beneficial change in communities. They will be empty shells, however, without a simultaneous achievement of processes at the local level that lead to community engagement, community direction and community energy and inspiration.

In short...

Vision

Communities develop through close participation in solving their own sustainability issues. In particular, they are able to help overcome the divisions and disparities in opportunity across cities, towns and between regions. Coordinated government services are vital to this process.

Objectives

- To link community development and sustainability.
- To more efficiently and effectively provide community services.
- To facilitate community development 'bottom-up'.

Actions underway include

- An Early Years Taskforce has been established to develop state wide strategies to enhance services for young children and their families through community engagement and better interagency collaboration.
- The Family Strength Program is to be extended to include new Indigenous family strength services and community based child and family centres.
- Developed the *Consulting Citizens Resource Guide* and created a citizenscape web site.
- Community development opportunities are being examined through new technology (see *Networked Neighbourhoods).*
- Crime Prevention Strategies involving the community are underway.
- Legislation is being developed for carers.
- A future has been created for City Farm through a long-term lease.

Proposed actions

5.1 Develop a Policy on Regional Integrated Community Services based on Regional Councils creating Plans that:
- examine the various community needs of their region
- assess the relevance of various programs and services already available
- link up to other economic and environmental issues in their area
- suggest how and where services could be co-located to improve their integration and relevance.

In short cont'd...

5.2 Facilitate local community involvement in defining community service needs thereby creating engagement with local issues and the inspiration and energy to solve them.

5.3 Use the Consulting Citizens Resource Guide to promote effective public consultation and active citizenship.

5.4 Review crime prevention programs to ensure links between community development initiatives and sustainability as a way of focussing partnerships in areas of multiple social disadvantage, especially using 'sense of place' projects.

5.5 Use a whole of government response to enhance the capacity and resilience of people at critical life stages, especially carers and volunteers.

Indicators and targets

The number of Regional Integrated Community Services Plans completed.

Global opportunities

Community based approaches to development are now the basis of most major international aid projects and are required as part of AusAID projects. Western Australian experience in this technique will be of international significance.

Further information

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Stange, L 2002, *Perth City Farm: Cultivating a vital urban community*, sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/cityfarm/cityfarm.htm>

> HOUSING AND SUSTAINABILITY

Good housing should provide shelter, safety, security, access to education, a sense of community and local access to amenities such as parks, schools and shops. Inadequate housing can exacerbate family pressures, harm health, limit educational achievements, strain family budgets and enforce long commuting trips to shops, schools and work.[49]

Housing …plays a significant role in supporting connections between people as well as being one of the most important factors in people's levels of poverty or wealth…it is a key factor in terms of people having a sense of empowerment and responsibility and a sense of safety in their community.

Western Australian Council of Social Services

The emergence of the working poor as a result of economic reform, the loss of low cost rental housing, reduced public housing funds and the changing role of the housing sector to support those in greatest need calls into question the long term sustainability of current social housing settings.

Department of Housing and Works

A growing body of research evidence has highlighted the critical role of housing in people's lives and the interconnectedness of housing, employment, health, education, land use and other social and economic factors[50].

Housing policy for decades has been focussed on affordability at the expense of location. There is a desperate need now, if sustainable community regeneration is to work, for it to involve a component of social and affordable housing.

This social approach to housing and the positive impact it can have on community development is the reason why housing is dealt with twice in this draft Strategy. *Building sustainably* dealt with housing as a shell, its ecological footprint and how it can be improved as well as better located. This section deals with housing as a means of better addressing social justice problems, as a facilitator of local community and as a core element in people's quality of life.

Sustainable housing must confront the issue of providing affordable housing. This needs to be done in innovative ways given the Commonwealth-State Housing Agreement has diminished the States' capacity to provide public housing (the amount of public housing in Australia is now down to 5-8% of all housing). Western Australia has 5% of public housing and has been able to provide more housing than any other State in recent years due to innovative land banking approaches that have enabled it to do joint venture developments. These developments have seen one in twelve houses being built set aside for public housing and a lot more affordable private homes. This is a major reason why Perth first homebuyers have been able to purchase homes at a lower price than anywhere else in Australia.

This innovative approach to housing through partnership between government and the private sector needs to continue. It is important that it now take on other sustainability elements as discussed elsewhere in the draft Strategy, such as innovations in sustainable building and construction (as in Atwell South) and in location (adjacent to railway stations as in Leda, Atwell South, Butler, Brighton and Clarkson).

[49] Housing Industry Association submission to the State Sustainability Strategy p.5

[50] Barron, L. and Gauntlett, E. ibid p.4

BOX 35   SUBIACO'S HOUSING

The Subiaco centre redevelopment, called Subi-Centro, has attracted worldwide attention for its architectural and urban design qualities, as has the redevelopment of East Perth.

A common criticism of Subi-Centro, however is that it is too expensive and therefore inaccessible to many people. While the East Perth redevelopment set aside 10% for social housing (a condition of funding from the Commonwealth Government's Better Cities Program) none was provided in Subi-Centro.

To address this situation, the City of Subiaco Council has developed a policy of building Council housing on Council land so that Subi-Centro will now have 10% social housing. Council plans to lease this housing to both Homeswest and various Housing Associations to enable people to live near all the good facilities and services of Subiaco, including the train system. As the Mayor of Subiaco has said, 'Why shouldn't ordinary people live in the best part of the city? Indeed everyone gains from having a social mix'.

There also needs to be a greater proportion of housing in areas being renewed and revitalised. This extra locational factor not only helps by utilising present infrastructure, it is often a critical element to the process of community revitalisation in older areas (see Box 35).

The provision of public housing and affordable private housing is at world best practice in urban areas in Western Australia. However the provision of community housing is not. Community housing is a housing option where the housing is managed by a Housing Association or Cooperative. It can also include shared–equity schemes. There is potentially a real market for this type of development which is also well placed to address sustainability issues (see Box 36).

BOX 36   ECO-VILLAGES AND COOPERATIVES: SUSTAINABILITY IN ACTION?

Several background case studies have been written for this draft Strategy on innovative housing developments that incorporate both ecological factors and social factors. These include the South Beach Eco Village, Pinakarri and the Rosneath permaculture village.

Housing cooperatives are only a small part of the housing market in Western Australia (there are 111 housing cooperatives in the state at this time). However they have the potential to tap the public sentiment to 'belong' and contribute to sustainability.

An example of a new cooperative is the Somerville Eco Village at Chidlow. Seventy-four members of this non-profit association are planning their village over the next two years. In a detailed submission to the State Sustainability Strategy the group stated, 'Our objective is to promote the eco village concept as a practical environmental and socially responsible alternative to land settlement and resources'.

Community housing needs facilitation. It is also the type of housing in which local government can become more involved, as it reflects a community focus. In addition, local governments often have land available on which community housing, demonstrating sustainability principles, could be developed. Indeed, local government is already active as a joint venture partner in developing community housing. Standards and accreditation of community housing need to be better established so that financing can be more assured and social and environmental outcomes can be better facilitated (see submission from Shelter and Community Housing Coalition of WA).

To ensure common good outcomes, the government has a role to play in the location of public housing, affordable private housing and community housing. There is a need to work out region-by-region the most appropriate mix of these housing options. This is an ideal process to be on the agenda of the State-Local Government Sustainability Roundtable and the possible subject of a Statement of Planning Policy.

In short...

Vision

Housing is available to people of all means and is also a key tool for the development of social capital, financial capital and natural capital.

Objectives

- Provide more public housing, affordable private housing and community housing.
- Ensure that this housing provides on-going sustainability benefits.

Actions underway include

- State Housing Strategy is underway.
- Residential Design Codes have been revised.
- Landstart's support for the Housing Industry Association's Partnership Advancing the Housing Environment (PATHE) evidenced by the development in Broome of culturally responsive design for Indigenous housing.
- New urban centres are being developed or re-developed in conjunction with the future northern rail link and the south west metropolitan rail line.
- Homeswest tenants are being employed in construction and landscaping of new estates on the urban fringes, alleviating local unemployment levels.
- Indigenous housing programs encourage community input into the design and siting of housing, while the remote area essential services program includes community participation and training in maintenance and management support.
- A new Indigenous housing agreement has recently been signed with the Commonwealth Government.

Proposed actions

5.6 Develop a Statement of Planning Policy on Public Housing, Community Housing and Affordable Private Housing with groups of local regional councils to ensure there is an appropriate distribution of all three housing tenures with guidelines and incentives, for example, density bonuses built into each local Town Planning Scheme.

5.7 Evaluate underutilised government owned land close to services, for example passenger train stations and institutional sites for potential to develop as mixed housing opportunities.

5.8 Develop a community housing framework involving standards and accreditation to ensure world best practice in the provision of this housing type.

5.9 Draw on research to demonstrate the business benefits of sustainable housing so as to help transform the house construction market to one receptive to sustainable development.

5.10 Utilise the housing research and training provided by the Australian Housing Urban and Research Institute to facilitate policy development in the provision and location of social housing in Western Australia.

Indicators and targets

Proportion and distribution of public housing, community housing and affordable private housing.

Global opportunities

Western Australia already provides consulting services in housing to other parts of the world. Innovations in community housing will be of global interest.

In short cont'd...

Further information

Armstrong, R 2002, *Reurbanisation in Perth: East Perth and Subiaco contributing to a growing trend towards a more sustainable Perth*, sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/Subiaco/Subiaco.htm>

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Ruane, S 2002, *South Beach Village: Prospects for a Sustainable Urban Settlement*, sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/southbeach/southbeach.htm>

Pinakarri, an intentional co-housing community in suburban Perth, is demonstrating how to live in a way that is environmentally sound and socially supportive.

> SUSTAINING HEALTHY COMMUNITIES

While most Western Australians have never lived as long, or as well, as they do now, good health and well being are linked with the state of the environment. As our lifestyles, consumption patterns, development and continuous urban growth continue to degrade the environment, new hazards and diseases will emerge.

The maintenance and improvement of health should be at the centre of concerns about the environment and development. Yet health rarely receives high priority in environmental policies and development, rarely figures as an important item in environmental or development programs despite the fact that the quality of the environment and the nature of development are major determinants of health.

World Health Organisation[51]

Innovative approaches are needed to help the Australian population to understand and act on the subtle links between environment, sustainability and health, and between local and global action.

Guest, Douglas, Woodruff and McMichael[52]

Good health is the most important asset of any country. Without a healthy population, productivity is low, health care costs are high and there is diminished capacity for skills development and social advancement.

Gains experienced in Western Australia's human life expectancy rates have predominantly been achieved by improved nutrition, housing, and safe and clean food and water, and have followed on from the economic success of our primary industries.

Continued improvements in human health are possible and will enhance our local wealth. They will rely not only on advances in medical science but also on the management of the resources of the State to ensure hazards to human health are controlled and the resilience of the community to cope with ongoing change is enhanced.

A population's health, both physical and mental, is a sensitive indicator of the health of the physical and social environment. One of the challenges for the health system is to protect the health of the population in the face of ongoing environmental and social changes.

Sustainability seeks to maintain and improve the environment and ensure that the natural ecological, physical and chemical systems that support life continue to function effectively. If we are successful, we will hand future generations the same potential for health and wellbeing that we have enjoyed.

The links between sustainability and health

The environment in which humans live affects them through the physical, chemical, biological, social, cultural and economic conditions to which they are exposed. Some of these are hazardous to health. Many of these hazards have been known for a long period of time, while others have arisen more recently through lifestyle choices, the effects of environmental degradation, social change, and an aging population.

Existing environmental hazards

Most Western Australians enjoy a lifestyle free of the traditional environmental hazards to health. The expectation that food will be safe, drinking water clean, the air unpolluted and our personal safety unchallenged has almost been fully met. This excellent physical environment has been achieved by the sustained efforts of agencies to identify and control sources of contamination and potential contamination. These efforts must be ongoing and involve investment in skills and knowledge, surveillance and monitoring and the implementation of effective control strategies.

Not all Western Australians have such a healthy environment. Environmental hazards are still inadequately controlled in remote Indigenous communities. Health problems, particularly infections, diabetes and injuries, are common and

[51] World Health Organisation, *Our Planet, Our Earth: Report of Commission on Health and Environment*, World Health Organisation, Geneva,1992.

[52] CS Guest, RM Douglas, RE Woodruff, AJ McMichael 1999, *Health and the Environment*, Tela Series Issue 1, Australian Conservation Foundation and Australian Medical Association, 1999, p. 35.

are directly related to the lack of clean water, lack of waste disposal, poor housing, overcrowding, dust and poor nutrition. Sustainability in Western Australia must mean these issues remain a priority focus.

New hazards arising from environmental and social change

Rapid social, technological, industrial and economic changes are all contributing to a new set of health hazards. Being of more recent origin, the impact of these hazards on health is less well understood, and effective control strategies may not yet be known, much less effectively implemented.

Following the control of infectious diseases, chronic illnesses such as cancer, heart disease, respiratory illness and diabetes have assumed a much higher importance in our community. The prevalence of these chronic diseases is increasing, fuelled by unhealthy lifestyle choices, such as tobacco use, inappropriate nutrition and lack of physical activity.

Tobacco use is the single most important risk factor for chronic diseases. Tobacco consumption is a causal risk factor for a range of diseases, including heart disease, stroke, peripheral vascular disease, many cancers and lung diseases. While smoking rates have been falling since the 1970s, about 20% of the population still smoke. Reducing tobacco use will continue to be a priority for a health sector focused on improving a population's health, and will, over time, translate to a significant reduction in demand for health care for illnesses caused by tobacco.

Inappropriate nutrition accounts for more than 30% of all cancers, and contributes to the growing prevalence of overweight and obesity. Low levels of physical activity compound the contribution of over-nutrition to obesity. The cost attributable to the six most prevalent illnesses related to low levels of physical activity, (heart disease, stroke, non-insulin dependent diabetes mellitus, colon cancer, breast cancer and depression) have been estimated at $36 million per year in Western Australia.

The past decades have seen enormous social change. Urbanisation is increasing and some small rural communities have become unviable. A high proportion of families have both parents in fulltime employment, with children in childcare from an early age and older children unsupervised and unsupported after school. Our society is being increasingly divided, as the gap between the most wealthy and poorest increases. Research on the health effects of social inequality, where the society has a mix of people with vastly different economic status and social empowerment shows the detrimental effects on personal and community health.

Urban sprawl and time pressures promote dependence on the car. Western Australians make 63% of all personal trips by car as the driver. Increasing car dependence impacts on business efficiency, environmental quality, community cohesion and personal quality of life. Residence in a suburb with little public transport and no access to a car creates social isolation, poor employment prospects and economic disadvantage. Good physical and mental health are jeopardised in these circumstances and as such health needs to be partnered with town planning processes.

Better work practices and healthy physical and mental work environments can also prevent potential mental health problems. In recent years many studies have documented the significant effects that issues such as extended working hours, bullying in the workplace and work related stress can have on mental health, the economy, family life and the broader community. 'Sense of place' is not just a good feeling; it is how we grow. The development of community, the importance of walking and of safe and supportive work environments, are all part of the sustainability health agenda.

New environmental hazards to health have also arisen from developments that have occurred without sufficient environmental safeguards and which have involved the unsustainable consumption of natural resources. Wastes are produced at a rate that is above the capacity of the environment to absorb, leading to landfills for solid waste, chemical emissions and changes in air quality and the atmosphere. Landfills must be appropriately sited to avoid pollution of ground water, and old landfills appropriately used to avoid human

exposure to chemical emissions. Nutrient run-off from agricultural lands has resulted in toxic algal blooms in our rivers, the overgrowth of sea grasses and fish death, which require better management of agricultural land. Within Western Australia, health will need to contribute to solutions to problems we have inherited and to change our development techniques to ensure that the environment is not further degraded.

New perspectives from ecological health are showing the links between health and the release of new diseases from the destruction of tropical rain forest habitat, climate change, global over-population, loss of biodiversity, depletion of fish stocks, stratospheric ozone depletion and depletion of fresh water (see background paper *Health and Sustainability* by Thomas, Douglas and Cohen). All such trends will need to be assessed and managed, for example, loss of the ozone layer has increased exposure to ultraviolet radiation and increased the risk of skin cancers, necessitating more attention to the provision of shade and use of protective clothing.

The links between the health of the environment and the health of the population are clear and inextricable. The health system has a central role to play in the sustainability agenda outlined in this draft Strategy. This role should encompass:

- Continued efforts to improve the living conditions of remote Indigenous populations, and to improve the health and life expectancy of Indigenous people. This is a long term agenda, and success will require persistence and creativity as well as commitment to difficult programs such as controlling the spread of sexually transmitted disease and managing alcohol, tobacco and substance abuse.

- The provision of advice on the health impact of new developments, new technologies and new industries to ensure that hazards to health are avoided where possible or controlled to be below levels that are hazardous to health. Health impact assessments are a vehicle for achieving this.

- The continuation of strategies to remedy existing environmental hazards and to avoid exposures that may damage health.

- Continuing to promote a health agenda that seeks to improve health, as well as to treat illness and care for those with ill health. Tobacco control provides a model to be followed by other programs which seek to reduce exposure to significant risk factors to health.

- The development and implementation of programs, incentives and disincentives to combat obesity and to make healthy lifestyle choices easier. The Western Australian Government's Physical Activity Taskforce is an example of such an initiative. It will be important that such strategies are well linked.

- Understanding the factors that make communities and individuals resilient to change, and promoting these, to develop a population that is skilled, educated and robust in the face of change.

- Partnerships with planning agencies to develop friendly and health promoting urban developments; with environmental agencies to ensure that health concerns are integral to environmental decisions; with transport agencies to promote safer and more accessible forms of transport; with education to ensure the next generation of Western Australians is well informed on sustainability.

The health sector itself, along with health sectors across all developed countries is confronted by ever increasing cost pressures stemming, in part from increasing community expectations, an ageing population and new technologies. The healt sector needs to improve its efficiency while at the same time raising community awareness about the importance of prevention and early intervention. These themes are explored in the recent report of the Health Administrative Review Committee.

The community and health sector neet to work collaboratively to determine how to achieve the greatest health gains for the greatest number of people while

recognising the continuing disadvantages faced by some sections of the community, such as Indigenous people. The health sector's contribution to the maintenance of a clean and safe environment for the majority of Western Australian is unseen and unacknowledged. Its essential role in providing our current levels of good health must be supported.

Failure to maintain the viability of the health sector will deprive the drive for sustainability of a major source of strength and advice, and a powerful resource ensuring that the current excellent health expectations are passed to future generations.

Not only is the health sector an important partner in reducing the detrimental effects of environmental change, it is also a potential contributor to environmental damage, through use of and disposal of drugs, chemicals, and radioactive materials. Health care centres are also potentially hazardous sites for both workers and patients and adherence with the State Sustainability Strategy will emphasise this ongoing commitment to safety.

In short...

Vision

The health of all people, especially Indigenous people, continues to improve and the health system also becomes a means for the promotion of sustainability.

Objectives

- Reduce the health disadvantage endured by remote Indigenous communities and communities with multiple social disadvantage.
- Create greater links between health and other elements of sustainability.
- Reduce the incidence and severity of disease by increasing the focus of the health sector on primary and secondary prevention.

Actions underway include

- Significant research is being undertaken (eg. the Enhealth Program) investigating the links between environmental degradation and health.
- Government agencies are working collaboratively to incorporate health impact assessment into the environmental impact assessment process.
- Funding for medical and health research infrastructure is supporting high quality medical research and assisting the development of a strong medical research sector.
- A new set of Statewide programs for 0-2 year olds is using evidence-based approaches for identifying children at risk and supporting family and community environments that are aligned with positive child development.
- Health is part of a multi-agency commitment to the better delivery of services to 0-8 year olds and their families/carers.
- A new Primary Health Partnerships model is supporting the development of collaborative approaches to health issues between community health, public health and general practice divisions at a Statewide and local level.
- The development and funding of new programs to promote a healthy lifestyle and prevent disease should reduce future demands on health services. The programs aim to improve nutrition, reduce smoking, encourage responsible drinking and increase physical activity.
- Initiatives are encouraging the contribution by volunteers to the delivery of health care services.
- Initiatives to attract and retain medical practitioners and other health professionals in rural and remote areas (eg. rural scholarships) are assisting to build and sustain health services in these areas. Telehealth is also being developed to expand health services to rural and remote communities.
- A review of Country Services will set the framework for establishing networks of sustainable health services with clearly delineated roles and minimum standards.

In short cont'd...

- Country Hospital and health service boards are to be replaced by District Health Advisory Councils. These will facilitate community participation and involvement in rural health services to ensure seamless service delivery. This will include the establishment of regional forums of key agencies.

- The development of a Rural Clinical School in conjunction with the Commonwealth Government, with teaching sites located in Kalgoorlie, Geraldton, Pilbara and Kimberley, will assist medical students to obtain rural and indigenous health exposure.

- The recently launched WA Drug and Alcohol Strategy 2002 - 2005 provides a framework for a comprehensive and coordinated response to drug use, involving all layers of government working in partnership with non-government agencies and the community.

Proposed actions

5.11 Support the existing role of the health sector in the control of environmental hazards and ecological health issues as well as community public health programs that deal with long term health issues.

5.12 Ensure health is part of the Regional Integrated Community Service Plans through the new Health Regions.

5.13 Continue to take account of cultural dimensions in health programs, particularly as they apply to remote Indigenous communities and in areas of multiple social disadvantage.

5.14 Provide effective links between the health sector and other agencies to create whole-of-government approaches to reduce lifestyle choices that cause disease and disability and new environmental hazards that affect health.

5.15 Develop and implement health impact assessments, as part of the sustainability assessment process.

5.16 Pursue the recommendations of the Report of the Health Administrative Review Committee which pertain to the development of long term planning directions and the focus of the Western Australian health system.

5.17 Initiate a program, involving key government agencies and local communities, to enhance the delivery of services to 0-8 year olds and their families and carers.

Indicators and targets

- Continued improvement in the wellbeing and longevity of Western Australians.

- Improvements in the health of Indigenous people.

- Number of sustainability issues that are addressed on a whole-of-government approach, including health.

- The inclusion of health concerns in environmental assessments.

- The development and testing of effective interventions for social inequality.

- Changes in lifestyle choices such as prevalence of tobacco use, nutrition and physical activity.

Global opportunities

Health impact assessment and successful Indigenous health programs will attract considerable global interest as has already occurred with some of Western Australia's more successful community public health programs.

Further information

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George, S 2002, *WA Physical Activity Taskforce: Helping Create a More Sustainable WA*, sustainability case study, Department of the Premier and Cabinet, Perth, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/PhysicalActivity/PhysicalActivity.htm>

> EDUCATION AND COMMUNITY AWARENESS FOR SUSTAINABILITY

Education is vitally important as it plays a key role in raising awareness and changing individual attitudes and behaviour towards achieving sustainability. People's awareness that they are part of their environment and 'not that the environment is something out there separate from them' is an issue that can be largely addressed by both formal and non-formal education.

> *Education needs to be focused on enabling people to become informed so that they can take up … what they want and prefer for their future … Such education is part of a process that continues from primary school through tertiary levels and into adulthood, so that people are full participants in creating more sustainable futures.*
>
> Environmental Alliance

> *There is a major need for education … to be a key factor in the Sustainability Strategy. Public support and interest is essential to ensuring sustainability is economically viable on a large scale, otherwise key issues and opportunities for sustainability will not be addressed to the full extent.*
>
> Danielle Brown

> *Education will help everyone to realise that what we do today will affect our children's lives and further generations to come.*
>
> Kim Reid

Any attempt to incorporate sustainability in the public, business and community sectors must also explicitly address awareness raising, public participation and education.

We need to raise awareness *of* sustainability and provide education *for* sustainability if we are to shift to a more sustainable society. To achieve this our pre-primary, primary and secondary schools in both the public and independent school sectors, together with our TAFE colleges and universities, each have a critical role to play.

Schools are especially important. Sustainability in areas such as health and community services and development can be supported through the school being a central facility and resource for these services. Children's school education, in partnership with community education, can also be a powerful way to embed the principles of sustainability and long-term change in behaviour.

But educational and awareness raising opportunities must also be available to the whole community of Western Australia, for example through:

- a broad media and advertising campaign

- support for community sustainability education initiatives

- the development of innovative community education sustainability programs.

The Western Australian education system has gone some way towards embracing the need to educate about and for sustainability. The Curriculum Framework to be implemented by 2005 is supportive of sustainability. A range of school and community based partnerships, such as Ribbons of Blue, the Gould League, Waste Watch, WaterWise, Bush Rangers and AirWatch are supporting this implementation.

The Department of Education's 'inclusive schooling' policy is working towards building a greater sense of community and commonality. Similarly the community involvement mandated under the *Education Act 1999* has provided a sound basis to involve and educate the wider community. Schools are

involved in a range of broader community programs including Landcare, Coastcare, Bushcare and Rivercare.

The Department's new school in South Atwell, which will open in 2004, is being designed according to world's best practice in sustainability. In addition, the Department's commitment to the WA Cleaner Production Statement will achieve a 10% reduction in energy utilisation and waste over the next 3 years in central and district education offices.

Over 100 public submissions considered the importance of education for sustainability and it is clear there is a real belief in the community that much more can and should be done.

The Department of Environment, Water and Catchment Protection is developing an Environmental Education Strategy. This initiative needs to be supported and implemented and consideration needs to be given to how environmental education can be expanded into sustainability education.

Public submissions also pointed to the need to address the lack of formal accreditation of environmental education training. They also pointed to the lack of any mechanism to bring sustainability to Universities, Catholic Education and Independent schools.

As is outlined in *Sustainability and business: Training and facilitation for sustainability*, TAFE does have a commitment to sustainability. As a corollary, the University Partnership Program has resulted in 40 case studies and 18 background papers being written as part of the State Sustainability Strategy.[53]

It was also argued that there is a greater potential for state and local government environmental education initiatives to enhance the localisation and on the ground effectiveness of programs. This could also involve the development of appropriate training programs for local government both in general environmental education/environmental management and in capacity building for the delivery of specific environmental programs in partnership with the State government.

Public submissions highlighted the lack of a central database of environmental education initiatives and resources that provides a central point of information and coordination for environmental education resources. This could be overcome by the proposal in the Environment Education Strategy above and the Sustainability Online proposal (see *Sustainability and governance: Sustainability information online*). Other submissions also questioned the level of staffing support presently available for environmental education in the Department of Education's central and district offices.

Strategies to assist education for sustainability will need to link in with other programs, for example, the Department of Education will need to participate in the development of Regional Integrated Community Services Plans, to facilitate school curriculum and teacher development in sustainability and to create school buildings and grounds as demonstrations of sustainability.

An example of unsustainable practices is the present regulation which facilitates clearing of native bush on school sites. Funding for gardens can be determined by how much land is cleared. It is proposed that this be repealed and instead (as outlined in the *Contributing to global sustainability: Protecting biodiversity*) that each school be encouraged to look after their native bush. This activity could be integrated into the school curriculum.

[53] Over 100 students are enrolled in the Sustainable Development undergraduate degree at Murdoch University. In addition, there are around 30 postgraduate students and more than 60 PhD students in the Institute for Sustainability and Technology Policy. Many have contributed background papers to the draft Strategy.

In short...

Vision

Education becomes the means by which current and future generations are inspired to live more sustainably and to find innovative solutions for the future.

Objectives

- To develop curriculum support for sustainability education.
- To use educational buildings and grounds to demonstrate sustainability.
- To assist teachers to develop their understanding and skills in sustainability.
- To develop a clear strategy for community awareness of sustainability.

Actions underway include

- An understanding of sustainability is being introduced progressively through the curriculum.
- The community has been involved with schools closely since 1973 and this is mandated under the *School Education Act 1999*, providing a basis for community involvement and education through programs like Landcare, Coastcare, Bushcare and Rivercare.
- Many school-based partnerships are already underway, including Ribbons of Blue, Gould League, Waste Watch and WaterWise, Bush Rangers, AirWatch and others.
- South Atwell Primary School is being designed in accordance with sustainable building design.
- Department of Education has reviewed air conditioning standards to meet best practice environmental standards, implemented a utilities management trial in which schools share in savings made in utilities costs, reviewed water usage to effect savings and worked to reduce under utilised but serviced land holdings.
- Department of Education's 'inclusive schooling' policy promotes acceptance of diversity and aids community development.
- Department of Education is a signatory to the Western Australian Cleaner Production Statement and is on target to achieve a 10% reduction in energy utilisation and waste in central and district offices over the next three years.

Proposed actions

5.18 Develop a comprehensive communications strategy on sustainability in the implementation phase of the State Sustainability Strategy which includes all aspects of formal and informal education.

5.19 Further develop the draft Environment Education Strategy to support education for sustainability.

5.20 Involve District Offices of the Department of Education in the development of the Policy on Regional Integrated Community Services.

5.21 Assign a senior officer in the Department of Education with responsibility for formal environmental and sustainability education through the Curriculum Framework.

5.22 Continue to introduce sustainability into the curriculum.

5.23 Encourage the further use of schools as community hubs.

5.24 Move towards new schools being built according to sustainability principles including universal design and progressively convert existing schools.

5.25 Orient schools to an ecological ethic, for example through school bushland projects, growing native trees from seeds, composting, using water run off for gardens.

In short cont'd...

5.26 To encourage greater biodiversity conservation and water efficiency, amend the Department of Education's policy that pays for grounds maintenance on the basis of how much bush is cleared.

5.27 Develop and support partnerships on sustainability education with other sectors (such as local government and the WA Collaboration) to maximise the delivery of sustainability education.

5.28 Develop partnerships and provide ongoing support to community-based groups to assist in delivering school and community-based programs that engage children in activities that contribute to reducing car use for school trips, including the promotion of proficient bicycle use.

5.29 Provide travel choice, cycling and walking behaviour change programs including the annual *Bike to School Day* during Bikeweek and the annual *Walk to School Day* during the *Walk There Today* week of walking events and the Walking School Bus program.

Indicators and targets

- Number of sustainability education initiatives in schools.
- Community awareness of sustainability.

Global opportunities

Education for sustainability is a global need and innovation in this area will attract global interest.

Further information

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> SUSTAINABILITY THROUGH CULTURE AND THE ARTS

The arts has a role to play in providing much of the interpretive work behind sustainability be it through educative exhibitions, story telling, public or visual art. The arts can be extensively employed as a means to engender sustainable community development goals through problem definition, communication, collaboration and celebration. In addition arts and cultural organisations have the capacity for reflection, criticism and articulation of community concerns.

The Department of Culture and the Arts contends that culture informs the human response to the environmental, economic and social life of the State....The journey towards ecological sustainability must also be a journey towards economic, social and cultural sustainability.

Department of Culture and the Arts

A vibrant culture, one encouraging diversity, equity and creativity, is at the very basis of a sustainable society

Western Australian Museum

In arguing that to ignore the importance of culture in development programs was to risk failure, the 1995 UNESCO Report, Creative Diversity, noted that:

It is culture that connects people with one another and makes the development of the individual possible. It is culture that defines how people relate to nature and their physical environment, to the earth and to the cosmos and through which we express our attitudes to and beliefs in other forms of life both plant and animal. It is in this sense that all forms of development including human development, ultimately are determined by cultural factors... It is meaningless to talk about the relation between culture and development as if they are two separate concepts, since development and the economy are part of, or an aspect of, a people's culture.

Culture shapes our values, beliefs and meanings. These in turn will shape our attitudes and actions with respect to sustainability. If Western Australia is to be sustainable, then what needs to be sustained is not only existing buildings and industries, but cultural and natural environments.[54]

Attempts made in the past to quantify the value of artistic, cultural and creative activities in dollar terms, are increasingly being seen as futile. The accepted statistical definition of the arts and cultural industries is very broad and the links between commercial activity and state government policy ill defined. Without the means to capture and evaluate these social and cultural measures it is not possible to realistically value the sustainable contributions or degrees of success made by arts and cultural bodies–for example, to the bridges built to the socially marginalised or to, from and within regional communities.

Arts and cultural organisations are critical to the development of a 'sense of place'.

In this regard, Community Arts Network WA Inc has long been active in community cultural development, partnering a range of agencies and community groups including local governments across the State and Indigenous communities in Ieramagdu (Roebourne). This work has served to acknowledge, preserve or enhance the culture of many communities. Similarly, the Western Australian Museum is delivering a range of programs designed to engage the community with sustainability issues. These include Museumlink, Biosphere West and three educational exhibitions *Sustainability WA, Watching Waste and the Power of Wind.*

[54] A background paper on the Arts, *Culture and Sustainability* was written by Alix Rhodes (see *www.sustainability.dpc.wa.gov.au/ backgroundpapers*).

[55] Museumlink produced the Sustainability WA touring exhibition available to some 85,000 people throughout Western Australia.

In addition to these developments, a far greater recognition is now given to the potential for cultural tourism to generate jobs in a socially and environmentally sustainable way. Recent examples of this include the Lurjarri Dreaming Trail in Broome and the Kimberley Coastal Odyssey which serves to interpret local and marine life.

Improved facilities are being planned for the performing arts (a master plan for enhancing Perth's existing performing arts venues and for shaping future developments is currently being finalised) and a whole of government approach to arts and culture is actively being pursued by the Department of Culture and the Arts. Examples of this are the Percent for Art scheme and, at a micro level, the planned Design Futures Conference, being held to better connect international design in the wood based crafts and value added timber industries (see Box 37).

BOX 37   GENERATING EMPLOYMENT IN FINEWOOD CRAFTS

Designing Futures has the potential to develop tangible employment, business and environmental outcomes and is a good example of how sustainability is linked to the arts. The project, being developed by Craftwest, has now attracted partners in Rio Tinto, Wesfarmers, the Australia Council, Lotteries Commission and the Departments of Local and Regional Government and Industry and Technology.

Melding wood craft with business, the project will team designers with furniture manufacturers to develop new products locally and overseas, lead to touring exhibitions and international fine wood tenancies. It will involve artists, manufacturers, the timber industry and the training sector and lead to a more sustainable timber industry in Western Australia. In artistic terms it is a leading example of art shaping, rather than reflecting, personal and public consciousness.

In the public and local goverment sectors, artists are already involved in the design of buildings, parks and streetscapes to help make them more regionally distinctive.

Story telling is undertaken by all art forms and can help us develop a deeper 'sense of place' (see Box 38). In particular, performing arts groups, writers and film makers, in the state are supported to tell Western Australian stories through literature, film and theatre productions with regional and local themes.

BOX 38   THE ARTS, FOOTBALL AND A 'SENSE OF PLACE'

The Fremantle Dockers use local performing art groups such as Deckchair Theatre to entertain football followers before home games. This award winning collaboration includes the now famous Len Hall Day on Anzac Day that has seen a huge public response to the dramatisation of Anzac themes.

Deckchair Theatre tries to help people to see the football arena as a public event celebrating 'sense of place'- in this case the Fremantle region. Its themes are designed to help people reflect on what is special about their place and celebrate it. Such use of the arts is an important element of community development.

While it is acknowledged that *all* art forms have a role to play, the Screen Industry Partnership Fund and the ABC co-production deal for local development purposes will assist in the promotion of more localised film and television production and assist the performing arts generally.

Box 39 is an example of how the arts can bring sustainability issues to life. The example outlined is but one of many across Western Australia, each of which can be seen to be addressing issues pertaining to sustainability. In this instance, art has been used to communicate in a culturally relevant way a potential solution to the growing diabetes problem among members of remote Indigenous communities in the North West of the State (see also *Sustaining healthy communities*).

BOX 39 HONEY ANT DREAMING

Over a year ago, Roebourne's Cheeditha Aboriginal community and the West Pilbara College of TAFE started an Indigenous art program in a disused heritage building in Cossack.

One participant, Mr Terry Willis, created a work called Honey Ant Dreaming, depicting ants' nests full of eggs with males collecting sugar. Purchased by diabetes nurse educator, Ms Sam Chandler, it was subsequently used as a teaching aid for a pilot diabetes project run by the Mawarnlkarra Health Service, the Pilbara Division of General Practitioners and the West Pilbara Health Service.

Ms Chandler noticed that the painting depicted how insulin works in the body, 'There's the sugar and the body cells and the ants, which are insulin from the pancreas'. One in two Aboriginal people in the region have diabetes and this is a good example of art informing and educating for sustainability. The program itself also provided those with health problems a reason to feel and get well.

'Healthy interest in art helps beat diabetes', *The West Australian* 3 July 2002, p.13

The above activities notwithstanding, public submissions on this issue demonstrate that the role arts and culture can play in the sustainability agenda can be enhanced in three ways:

- Consolidating the role that community arts (and indeed all arts and cultural activity) can play in enhancing a 'sense of place'.

- Enhancing the capacities and viability of arts organisations through a changed focus in funding and support programs.

- Embedding arts and cultural considerations in the sustainability assessment of projects, programs and policies.

Consolidating the role of community arts

Community arts has been promoted as an important focus of arts funding for many years, indeed from the very earliest days of Commonwealth Government arts funding. The importance placed on this area has changed over the years, and while the building of appropriate arts centres and workshops has been a primary focus, the need for community-based art activity has always remained. This is particularly important when sustainability is considered as its roots are deeply set in community values. Community art that celebrates local 'sense of place' needs to be a high priority when sustainability is a factor in funding.

The extensive range of local art galleries and museums and other local art forms also need to be supported and valued as contributors to the creation of a 'sense of place'. The viability of these local endeavours may require a whole of government approach to drive new partnerships with the business and commercial sector.

Enhancing the capacities and viability of arts organisations.

The funding strategies which have characterised support for the arts over the last 30 years need to be examined to ensure they are in line with the development of arts organisations.

New funding models and mechanisms should be developoed to encourage the endeavours of arts organisations. A range of structures may develop to suit different operating styles. The complementary entrepreneurial activities of arts companies could also be encouraged and the centrality of annual subsidies modified as part of this process. The current focus on funding art form acitivity could be enhanced by incentives for arts organisations to seek opportunities for their industry to partner and link with other interests an embrace the development and viabilty of the arts industry as a whole.

The need to pursue strategies that address the lack of economic status and financial viability of artists is essential. This is being addressed through the review and development of a number of arts and cultural policies in Western Australia. These include a review of art development policy, a regional cultural policy, a contemporary music policy, an arts and education policy an Indigenous arts and cultural policy, a re-focused cultural tourism strategy, a capital works policy and a policy on small and independent museums. There are currently two major national reports, which will also influence future funding practices. These are the *The Small to Medium Arts Sector Report* and the *National Arts*

and Crafts Inquiry due to be released at the end of 2002. These developments are all intended to contribute to a more progressive funding and support systems for arts and cultural organisations.

Other trends requiring greater attention are the 'demand driven' funding strategies used to support touring networks and the importance of touring itself. The opportunity for Western Australian arts and cultural organisations to tour and export services across the nation, to the Indian Ocean region and elsewhere is fundamental to their growth and viability, just as the visits of groups from other states and overseas is important to the national and local perspectives of the public.

These demand driven strategies can mobilise community interest in the arts and empower communities to express their preferences for a range of artistic expression and cultural activities. They also assist in overcoming limitations to growth generated by our small population base. The adoption of touring and interstate exchange is an important component of the health and advancement of arts and cultural organisations. This will create a viable and exciting arts profile for the state.

Embedding arts and culture in sustainability assessment

Social assessment (incorporating arts and cultural considerations) is a major component of the triple bottom line process proposed in the draft Strategy. Support for such an approach has been provided by the World Bank, which has argued the need to marry cultural activity to economic development.

The framework for social assessment is still in its development and is clearly an interesting and emerging discipline. The arts and cultural component is likewise a new and as yet virtually unexplored area. However in certain instances existing cultural institutions have taken a role, for example, the Western Australian Museum will be involved in protecting the rock art of the Burrup Peninsular.

The assessment of the cultural dimension of all projects will inevitably include consideration of existing cultural networks and how they can be maintained and enhanced, how the cultural and artistic significance of places is understood and supported and how Indigenous issues can be assessed. Future strategies should encompass:

- The need to take greater advantage of the still largely untapped opportunities created by Western Australia's position in the Indian Ocean Rim, including the opportunity to capitalise on continuous 24 hour film work production cycles between the Atlantic and Indian Ocean zones.

- The need to enhance Indigenous employment opportunities in the Arts and give greater representation of Indigenous culture and history in local museums, particularly the globally significant Burrup rock art.

- The potential to embed art in the health system (through an extension of the Percent for Art scheme) and other arts and health partnerships to improve health outcomes.

- The need to develop a range of strategies to make Perth (city centre and sub centres) more culturally vibrant and thereby a better place to visit and live.

- The need for further strategic investment in the Western Australian Museum's eco and indigenous tourism products.

- The need to institutionally integrate the use of art and artists in planning processes and in land developments so as to help create a sense of difference and enhance urban settlements.

- The need to take advantage of the new ABC Production Facilities and associated funding to ensure a local film production industry develops in Western Australia.

- The potential for artists to work alongside sustainability scientists to generate new products and to offer new solutions to complex problems.

- The need to initiate a cultural tourism strategy for Western Australia which capitalises on renewable resources.

- The need to develop new capital infrastructure for the arts and culture.

- The need to establish a Cultural Property Bank for medium term lease of government properties and land holdings for temporary use on peppercorn rents as artists' studios.
- The need to encourage the Federal government to introduce *droite de suite* (resale royalties) on artworks and intellectual property rights.

In short...

Vision

Culture and the arts become a means for developing the Western Australian community's sense of place, future needs and understanding of sustainability.

Objective

- Reinforce a sense of place and identity among the community.
- Include creativity and the arts in policy development, implementation and sustainability assessment of new projects, policies and programs.
- Increase industry's utilisation of the arts and creative industries in research, innovation and entrepreneurship in the arts.
- Encourage greater personal creativity and participation in the arts and cultural activities.
- Develop a vibrant and competitive economy for the arts and creative industries.
- Contribute to urban regeneration processes and projects.

Actions underway include

- *Symbiotica* - A science/arts project
- The Department of Culture and the Arts is encouraging a whole of government approach to arts and culture.
- The Department for Planning and Infrastructure's Working Paper No 12 *'Can Perth be more Creative?* supports a shift to creative industries.
- Community Arts Networks of Western Australia has been working with local governments to develop cultural plans and has conducted cultural planning with Aboriginal communities in Ieramagadu (Roebourne).
- The Percent for Art scheme.
- Ellenbrook and other land development projects have involved artists to create a sense of difference.
- MuseumLink's *Sustainability WA* exhibition toured regional areas and the metropolitan area and the *Watching Waste* exhibition will open in late 2002. *The Power of Wind* exhibition is being developed.
- The WA Museum is undertaking significant planning for its Biosphere West initiative.
- Fremantle Aboriginal Heritage Walking Tour has been established.

Proposed actions

5.30 Develop programs, partnerships and incentives that encourage research for example into cultural heritage, innovation, new products, entrepreneurship (new distribution channels) and business sponsorship through the arts around key sustainability issues.

5.31 Encourage flexible funding criteria that facilitate entrepreneurial endeavours in the arts and cultural activities that promote sustainability.

5.32 Ensure that sustainability is embedded in the goals of community arts and community cultural development processes.

5.33 Support Indigenous cultural issues in planning, especially for new developments so that regional Indigenous stories and perspectives can be built into the emerging story of the region.

5.34 Support cultural tourism endeavours that meet heritage, reconciliation, environmental and community access and development criteria.

In short cont'd...

5.35   Develop the BiosphereWest Plan for the provision of a Museum facility which utilises the building as a sustainability educational tool in itself.

5.36   Improve the opportunities for children and young people to experience art and cultural activity including through better coordination of school visits and partnerships with arts and cultural organisations.

5.37   Take advantage of the new ABC Production Facility to forge new partnerships and ensure local 'sense of place' film and drama are created in Western Australia.

Indicators and targets

- The ways government agencies use the arts and culture to advocate sustainability practices.

Global opportunities

The opportunity exists for arts agencies to create multinational links with communities throughout the Indian Ocean region to plan expositions of cultures and maximise opportunities that exist for 24 hour film work.

Similarly, the Western Australian Museum can contribute to global sustainability by forming networks and partnerships with museums worldwide. This fosters dialogue, research, ideas and actions to clarify and expand the role of museums in securing a sustainable future for their communities.

Further information

Rhodes, A 2002, *The Heart of Sustainability: An encore for culture and the arts*, sustainability background paper, Draft State Sustainability Strategy CD-ROM, Department of the Premier and Cabinet, Perth.

> ## MULTICULTURALISM AND SUSTAINABILITY

Western Australia is a highly diverse community which provides extra opportunities to address the global and local sustainability agenda.

Although the definition (of sustainability) includes the concept of social, the definition used for conceptualising sustainability is inadequate as it excludes the concept of culture … An inclusion of the concept of culture not only recognises the cultural dimension of sustainability, but also provides a space/place in which different groups (Indigenous, women, youth, ethnic minorities) needs and aspirations can be valued.

Community Arts Network

The inclusion, participation and contribution of people from different ethnic, religious and linguistic backgrounds is critical to the effectiveness of the State Sustainability Strategy. As elaborated in *The conceptual base: developing a framework for sustainability*, little progress has been made on resolving the social aspect of development. Incorporating the social dimension into the economic development process is necessary to achieve creative partnerships that can contribute to sustainability.

Today's Western Australia is a multi-ethnic and multicultural society whose members are drawn from a rich heritage of cultural traditions and histories. Ethnic, religious and linguistic diversity poses a number of challenges to decision-makers, service providers and policy makers.

The central issue relates to creating and sustaining a cohesive, cultural and political identity. This means enabling, empowering and ensuring that all citizens have a legitimate voice as Western Australians. It demands inclusion, and not exclusion based on the grounds of race, ethnicity, national origin, language, as well as factors such as the length of time spent in Western Australia. Excluding those who appear or are considered to be "different" threatens the sustainability of a stable and productive State.

The benefits of multiculturalism to sustainability come from the benefits of recognising difference. Different cultures have different approaches that can be utilised for solving the multiple problems of sustainability. Their integration and application to sustainability comes from a mutual recognition of the fundamental principles underlying sustainability.

Multiculturalism challenges "old" or traditional ways of conceiving how a community may live, work and grow together when that community is heterogenous, rather than homogenous or mono-cultural in terms of practices and beliefs. Therefore, to develop a multicultural state, community groups must be empowered to participate as well as confront the many challenges we all continue to face in terms of prejudice, discrimination and invisibility. If sustainability is to be achieved, it is critical for the rights of all Western Australians to be safeguarded, and for diversity to be promoted and recognised.

Multiculturalism in Western Australia is a commitment to social equality based on four key principles - civic ideals, fairness, equity and participation.

Multiculturalism, and the notion of diversity, should help inform and shape the planning, development and delivery of services. Such an approach necessarily means processes that facilitate clients and customers from diverse backgrounds to participate in the design and delivery of services and products from the outset, and not as an afterthought. Including diverse people in the conceptualisation of services will result in the delivery of responsive and cost-effective services, as well as greater innovation, creativity and productivity.

Sustainability is about building communities and strengthening the bonds between them. The *Community Services and Development* section explored some of the principle ways in which that can be done. Multiculturalism and sustainability means that the cultural needs of all citizens must be empowered to participate effectively, creatively and critically in community life. This includes ensuring that the necessary assistance for people from culturally and linguistically diverse backgrounds is made available so that they are able to participate in a meaningful way.

It also means that there is a greater representation of ethnic diversity in decision making processes and that an emphasis is placed on community partnerships through meaningful consultation on policy development and implementation.

Some measures have already been implemented to give effect to an even more inclusive and diverse Western Australia. These include the establishment of an Anti Racism Strategy (see Box 40).

BOX 40   ANTI-RACISM STRATEGY

The purpose of the Western Australian Government's Anti-Racism Strategy is to eliminate racism in all its forms by first understanding racism in all its manifestations and then taking action to address the social and structural issues. It is a strategy that supports sustainability principles. It seeks to meet its objectives by:

• Forming strategic and community partnerships with other bodies in relation to anti-racism.

• Increasing public awareness of racism.

• Empowering groups which are targets of racism, through advocacy, public education and the provision of credible and persuasive information.

• Strengthening the Equal Opportunity Act 1984.

• Addressing issues as they arise in the short-term and developing and implementing longer term strategies to target specific structures and behaviours. and

• Encouraging and acknowledging positive initiatives in the elimination of racism and the promotion of harmonious relations in the community.

On the basis of a wide ranging consultation process, a committee, chaired by the Premier, is developing the Anti-Racism Strategy.

There are a number of constraints to the achievement of the ideals of multiculturalism in Western Australia, including:

• the many definitions associated with multiculturalism over a considerable period of time which has caused much confusion and, at times, discontent amongst Western Australians

• the perception that multiculturalism refers to a policy perspective which provides special treatment for people of diverse backgrounds

• the association of multiculturalism primarily with the practice and preservation of traditional cultures, including food, song and dance

• the lack of recognition of the unique status of Aboriginal people as the first Australians in previous policies relating to multiculturalism, which has contributed to the rejection of Multiculturalism by Aboriginal Australians

• the attachment of some Western Australians to a monocultural Western Australia

• the refusal by some Western Australians to treat people of diverse backgrounds as equals worthy of dignity and respect

• the anxiety/fear of difference felt amongst some Western Australians

• tension amongst and between Western Australians of diverse backgrounds.

However, there are also some promising opportunities for sustainability in the achievement of multiculturalism which include:

• Western Australia, as confirmed through the 2001 Census, is the most diverse of all Australian states

• extensive research shows that migrants help make links to the global economy

• partnerships between the Government sector, non-government sector and community groups in the development and implementation of joint initiatives which promote multiculturalism

• collaboration across the public sector to ensure strategies are sustainable and effective.

In short...

Vision

An inclusive Western Australia where all individuals and groups participate equitably and in a spirit of mutual respect, enriching, developing and sustaining the social, economic and environmental development of our State.

Objectives

- Building and sustaining the democratic and egalitarian traditions of this State by enabling all its members, drawn from a rich heritage of cultural traditions and histories, enjoy individual freedom, mutual respect and equality of opportunity to participate equitably in all spheres life.

- Developing strategies for public sector services to respond to the needs of diverse groups of clients, including newly arrived migrants, refugees, women, seniors and youth.

- Utilising the State's diversity to generate greater innovation, creativity and productivity for the State's development and sustainability in the future.

Actions underway include

- The development and implementation of the Government's Multicultural Policy.

- The development of an Anti-racism Strategy for Western Australia to address issues relating to individual and systemic racism.

- Implementation of the Minister for Multicultural Interests' Multicultural Ambassadors Awards.

- The development and implementation of a community education strategy.

- Further development of the Government's language services policy to develop communication strategies that improve access to services to people with a limited proficiency in English

- Online WA Multicultural Communities, established to assist multicultural communities and service organisations to get online.

- Community grants program to enhance initiatives relating to multiculturalism at the local level.

Proposed actions

5.38   As part of the consultation phase of developing the State Sustainability Strategy, a seminar will be held entitled *Many Cultures: One Earth* to seek perspective on all aspects of the Strategy. The seminar will include the various authors of the background papers on explaining the ethics of sustainability. The aim will be to establish the seminar as an annual event to review sustainability in the State from an ethical and cultural perspective.

5.39   Finalisation and implementation of the Anti-racism Strategy including implementation of a community consultation strategy to obtain community feedback on issues relating to multiculturalism and anti-racism as well as implementation of a community education strategy which encourages an understanding and appreciation of multiculturalism and which dispels stereotypes and prejudicial perceptions.

5.40   Continue to develop multicultural perspectives and link them to sustainability outcomes through:

- Expansion of the Minister for Multicultural Interests' Multicultural Awards

In short cont'd...

- Production with Channel 31 of television programs on multiculturalism and racism
- Cultural awareness training across the public sector
- Greater diversity towards appointments on Boards and Committees.

Global opportunities

Multicultural perspectives in sustainability are a truly global phenomenon and should be pursued in this context.

Further information

People from a diverse range of creeds, traditions and philosophies were invited to submit submissions on ethics and sustainability. These are available on the CD-ROM, the sustainability web site and are listed in Appendix C.

Multiculturalism is celebrated in the Fremantle sculpture of Italian-born sculptor Porcini, who made statues of famous Western Australians but was little known himself. The influence of Italian culture in Fremantle led to alfresco dining which has helped to revitalise inner city areas across Perth.

Source: Peter Newman

8 Sustainability and business

Vision for Western Australia

Western Australian businesses, large and small are globally innovative and receptive, leading to the resolution of sustainability issues at home and abroad and achieving competitive advantage and prosperity.

Goal

Assist business to benefit from and contribute to sustainability.

Priority areas for action

I personally believe that sustainability is the most important issue facing…industry… in the 21st century. We look at it not just as a requirement, but as an incredible opportunity. I see a day when everything my company does - our facilities, our products, our services - contribute to a sustainable future.We have an opportunity to have a major positive impact on society.We cannot afford to miss this opportunity.

William Clay Ford, Jr., Chairman, Ford Motor
Quoted in The Chamber of Minerals and Energy submission

Sustainability has risen out of a need to address market failures by taking a fresh approach to economic policy. Business organisations around Australia and the world have been examining over the past ten years how the economy can make a positive contribution to sustainability. Individual companies in Western Australia are also beginning to take innovative approaches to sustainability (see Box 8 on Hamersley Iron's sustainability assessment process in *Sustainability and governance: sustainability assessment* and as well as many of the Sustainability Case Studies <http://www.sustainability.dpc.wa.gov.au/docs/CaseStudies.htm>).

We are living in an age that seeks to invent a new system of partnership between the government, business and civil society, recognising the need for the market to be regulated consistent with the government's commitment to sustainability. This new partnership will enable Western Australia to seize the economic opportunities that the sustainability agenda can provide.

Businesses have identified a range of new opportunities arising from the sustainability agenda. As BP Australia demonstrated in its submission, there are real niche opportunities for the early movers in sustainability. Those that lead are being recognised by the financial sector in a range of new indices such as the Dow Jones Sustainability Index. As economic reforms for sustainability take effect, the shift of capital to investments in sustainability will accelerate. Innovation will become vital for industry to adjust to the financial and economic reforms likely to occur globally in response to the challenge of sustainability.

The World Business Council on Sustainable Development is the peak business organisation examining the business case for sustainability, and draws its membership from organisations such as the Business Council of Australia and high profile global corporations, including some which are based in Western Australia. Business organisations have consistently recommended that governments establish a more appropriate market context for business to assist in the transition to sustainability. The World Business Council on Sustainable Development has identified seven key changes required if business is to assist in achieving sustainability through the market (see Box 41).

BOX 41   SUSTAINABILITY THROUGH THE MARKET - SEVEN KEYS TO SUCCESS

Key 1 Innovate
Establish a culture and capacity for technological and social innovation to generate sustainable solutions, products and services.

Key 2 Practice eco-efficiency
The World Business Council on Sustainable Development defines eco-efficiency as being "achieved by the delivery of competitively priced goods and services that satisfy human needs and bring quality of life, while progressively reducing ecological impacts and resource intensity throughout the life cycle, to a level at least in line with the Earth's estimated carrying capacity."

There are three areas that are critical to practicing eco-efficiency:

• reducing resource use, impacts, and operational costs

• cooperation between companies to improve cost efficiencies while moving towards a zero waste target; and

• delivering better design and functions for lower impact in use and higher market share.

Key 3 Move from stakeholder dialogues to partnerships for progress
Promote the establishment of partnerships for progress which are built on common goals, empathy, open feedback, flexibility, ability to compromise, and shared rewards. Such alliances can offer business, government, and civil society new solutions to common concerns facing us all.

Key 4 Provide and inform consumer choice
Business, Government and community organisations using the media, advertising and other forms of communication, combined with behavioural change programs to promote sustainability messages, fostering a consumer culture that helps people wield the power of demand in a thoughtful way.

Key 5 Improve market framework conditions
Market aspects which hinder sustainability include monopolies, perverse subsidies, and prices which do not reflect real economic, social, and environmental costs. Legislation and regulations to address these market failures are required in order for business to help achieve sustainability.

Key 6 Establish the worth of Earth
Create accurate and timely price signals so that resources are conserved and future opportunities are not squandered. Markets should reflect the true environmental and social costs of good and services, requiring the removal of perverse subsidies. The use of economic instruments such as tradable permits are recommended.

Key 7 Make the market work for everyone
Ensure that new technologies and sustainable goods and services are affordable to all in society, and that they are transferred to developing regions of the world to alleviate poverty and increase intra-generational equity.

Source: World Business Council for Sustainable Development[56]

A critical issue for business if it is to make a significant contribution to sustainability will be the ability to mobilise sufficient financial resources to make the transition. Important changes are emerging in financial markets where large streams of capital dedicated to socially responsible investment are stimulating new sustainable business activity. Government has an important role to play in encouraging a greater proportion of capital to be directed to sustainability.

The overall thrust of the economy towards knowledge-based goods and services is an important component of sustainability, particularly in generating the new jobs required to achieve sustainability. Business, particularly small to medium sized businesses are requesting support in building their capacity to support sustainability. Initiatives in training for a knowledge-based sustainability economy are discussed in this section. The majority of the issues discussed in this document in terms of sustainability assessment and greenhouse for example, are directed at larger businesses rather than small business.

Government can assist businesses to find ways into new sustainability markets by assisting with market intelligence, promoting market access and by assisting with the skilling of businesses. The innovation needed to make a contribution to sustainability also requires a new kind of research and development. In Sustainability and governance a Forum On Sustainability Science is proposed to help determine research priorities and possibilities in Western Australia and the Global Centre for Sustainability is outlined as a vehicle for attracting large sustainability projects to Western Australia.

[56] World Business Council on Sustainable Development, Sustainability Through the Market, Geneva, Switzerland, 2001.

Financial reform and economic instruments are essential for the emergence of more sustainable businesses. This section addresses the need to provide the financial and economic policy framework to facilitate sustainability. It also identifies opportunities for implementing sustainability by promoting industrial ecology, eco-efficiency and cleaner production.

Industry sustainability covenants, an innovation recently investigated by the Victorian Government, is also discussed. These covenants would enable businesses to achieve increases in environmental performance while improving the economic bottom line by committing to key sustainability outcomes in their goods or services.

The Australian Corporate Citizenship Alliance was established to help Australian businesses incorporate the principles and practices of corporate social responsibility. In its submission the Alliance describes itself as seeking to assist Australian business, 'to sustain their success in ways that demonstrate respect for ethical values, people, communities and the natural environment'. There is a real need for a set of business principles and practices to be developed by Australian business that can give substance to these goals. The government will provide a forum through the State Sustainability Strategy to enable this to occur.

As for other elements of the draft Strategy a partnership will be established with business to further explore how the Strategy can be finalised and implemented. This partnership is illustrated in Figure 11 below.

Figure 11 Partnership for Sustainability and Business
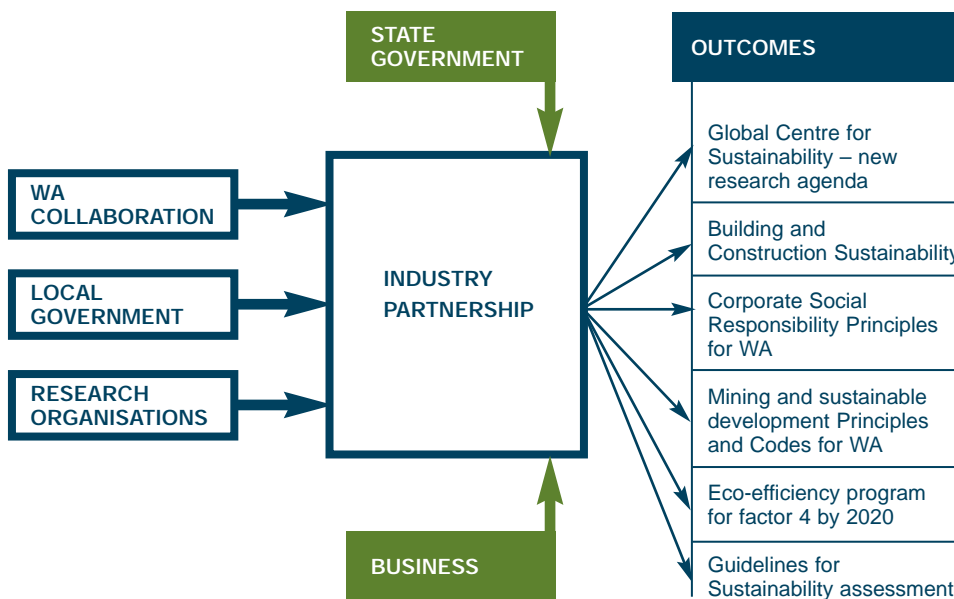
> TRAINING AND FACILITATION FOR SUSTAINABILITY

The new global economy of sustainability requires new concepts to be applied in business and industry and this requires training, and facilitation of sustainability enterprises.

TAFE colleges afford us the opportunity to transmit the core skills and values associated with sustainability both through formal programs and through general awareness raising initiatives.

Department for Training

Each of the many emerging opportunities in sustainability requires a skilled workforce. Universities are able to assist through emerging disciplines such as environmental science, sustainable development, environmental engineering, environmental design and environmental health. However it is the vocational education and training sector that is best able to respond quickly to the needs of industry for many of its re-training and accreditation requirements.

TAFE in Western Australia has been developing a range of new courses that build on the Department of Training's Green Jobs report (see <http://www.accessallareas.westone.wa.gov.au/enviro/report/enviro1.pdf>). Innovative training programs have begun in bush regeneration, aquaculture, land management, renewable energy, water conservation, risk management, building and energy rating. TAFE is also well placed to provide accreditation for sustainability professionals.

Research is underway on the growth of green jobs, identifying emerging green jobs and potential skill shortages. Recently completed research has identified bioprospecting or niche 'bush product' opportunities in the South West. Similarly, four products (Blister Bush Oil, Sandalwood Nuts, Warrigal Greens and Swamp Sheoak) were identified as having high commercial potential. Work is continuing on sandalwood plantations and Kimberley wild flowers.

TAFE has become a model for the early implementation of the Cleaner Production Statement and one college has recently completed a model Environmental Audit. Consideration is also being given to establishing a Centre of Applied Sustainability as a way of co-ordinating the new training agenda in sustainability. This can be an important link to the Global Centre for Sustainability, as major projects such as those envisaged for the Global Centre, often require the kind of practical orientation that TAFE can provide.

Training is also about anticipating the future and the Department of Training has held some important conferences aimed at doing this. *The Working Visions Conference* could now pick up many of the themes outlined here to highlight the emerging global opportunities in sustainability. There is a need to create further links between industry and the education sector to make the government's approach to education and training more cohesive and proactive.

The Department of Training will also be involved in the implementation of the Australian National Training Authority's next National strategy to run between 2004 and 2008. This strategy will reflect 'triple bottom line' thinking and translate that thinking into specific programs and actions within the training framework, consistent with sustainability objectives.

Finally, employment creation is not just about vocational education and training; it is also about facilitation of people with good ideas and skills to enable them to create partnerships for marketing and finance. This kind of facilitation can be done at the community level in ways that have much deeper sustainability outcomes, especially in rural areas. Western Australia has had such enterprise facilitation programs (see for example <http://www.sirolli.com>) and needs to review how it supports small business in light of sustainability principles and processes (see Box 42).

BOX 42   TRAINING FOR SUSTAINABILITY INNOVATION[57]

The Department of Training has allocated around $2.6 million to science and technology innovation grants. These grants encourage training organisations to work with industry to develop innovative science and technology projects that will in turn lead to viable export industries on which Western Australians can work without leaving the State.

One recent example was money provided to fund the Film and Television Institute's proposed Centre for Interactive Game Design and Traditional and Digital Puppetry. What in effect will be a marriage of traditional puppetry with digital animation could well lead to the growth of a cutting edge and sustainable export industry.

Other projects to receive grants include an investigation of overseas trends in large-scale fish farming using sea cages and research and testing as an alternative to the use of cyanide in gold processing.

In short…

Vision

Training leads Western Australia into major global market opportunities in sustainability as well as solving global problems.

Objectives

- Western Australia has a world-class training and education program for sustainability.
- There is a cohesive and proactive approach to training and education in Western Australia.
- There is a high level of understanding of sustainability and a skill base to enable Western Australia to take maximum advantage of the economic opportunities from the global sustainability agenda.

Actions underway include

- In November 2001, the Department of Training together with several TAFE colleges became signatories to the Western Australian Cleaner Production Statement.
- Selected TAFE courses promote sustainability principles.
- The Australian National Training Authority is addressing sustainability in its 2004-08 training framework.
- The Department of Training has conducted research into 'green jobs' and the Department's website provides information on 'green jobs' through 'Enviroworks'.
- Regional employment coordinators support the development of niche industries and jobs in sustainability.

Proposed actions

6.1 Work towards establishing a Centre of Applied Sustainability in TAFE to coordinate the new training agenda in sustainability.

6.2 Work towards expand the Green Jobs work of the Department of Training to incorporate the various initiatives in the State Sustainability Strategy on new global employment opportunities in sustainability.

6.3 Build on the Department of Training's *Working Futures* conference to hold an annual 'vision' event that attempts to work through how Western Australia can position itself in global sustainability issues.

6.4 Review the process of enterprise facilitation within the state government to ensure that there is a core of sustainability principles and focus on economic opportunities in sustainability and ensure that there are developmental and community-based approaches to enterprise facilitation, especially in rural areas.

6.5 Provide leadership on certification and accreditation for professional activities.

[57] Kobelke, J (Minister for Training) 2002, *Training Minister announces $800,000 for Science and Technology projects*, media release, Government Media Office, Department of the Premier and Cabinet, Perth, 23 July

In short cont'd...

Indicators and targets

The number of new TAFE courses in sustainability areas.

Global opportunities

Many global aid projects today are training for sustainability. A coherent training program in sustainability will lead to significant opportunities overseas, especially if it is in partnership between government, TAFE, universities and industries.

Further information

Annandale, D 2002 *The potential for green jobs in Western Australia: A report to the Department for Training*, Institute for Environmental Science, Murdoch University, Perth.
http://www.training.wa.gov.au/sub-sites/access/content/enviroworks-report.pdf

The Environmental Technology Centre at Murdoch University was recently made a partner centre for the United Nations Environment Program. This enables the centre to provide training throughout the Asia-Pacific Region.

Source: Environmental Technology Centre, Murdoch University

> FINANCIAL REFORM AND ECONOMIC INSTRUMENTS FOR SUSTAINABILITY

Economic theory has undergone major changes in recent times in response to challenges arising from the sustainability debate, particularly by environmental and ecological economists.

Business can be most effective in the development of innovative approaches to help achieve sustainable development,

Worldwide Fund for Nature Australia

We need to put a true monetary value on our enjoyment and use of our natural environment and biodiversity. The quality of life we enjoy because of living in a healthy environment, being able to visit a clean beach with clear water, being able to enjoy a walk in the Karri forest needs to be measured.

Sylvia Tetlow

… innovative and entrepreneurial companies can take advantage of new technology and/or consumer preferences to deliver more sustainable products and services which take into account the environmental or social benefits. Government can assist this process through financial support, taxation changes or preferential purchasing policies.

Halliburton KBR

Changes in the approach to economics recognises that neo-liberal economics contains many assumptions that are false and that undermine efforts to protect the environment and achieve sustainability. For example, the following assumptions have been common in conventional economic theory:

- the economic system is separate from ecological systems

- trends in prices show there are no limits to resources because technology and innovation will always find replacements for scarce resources

- access to information to guide consumer choice is perfect

- the value of a resource, good or service today is always greater than its value in the future.

New approaches to economic theory acknowledge that:

- the economy is a creation of and is contained within the society and that the society is a creation of and is intimately connected with the ecology

- material, energy and water flows in the global economy are currently not sustainable and have exceeded the carrying capacity of the planet

- consumers and producers usually act in the absence of information, particularly information on the ecological and social consequences of a decision

- discounting procedures in economic policy work against inter-generational equity, and can result in perverse ecological and social impacts.

This new approach to economics will fundamentally redefine how we conceive of progress and development. We will begin to see a new direction in economic development emerge. Alternative approaches to the economic assessment of private investment decisions and government policy will become standard and will help drive society toward sustainability.

Alternatives to Gross Domestic Product (GDP) will also become important in measures of eco-efficiency. For example, currently eco-efficiency at a macro-economic level is determined by the amount of material, energy and water required to produce a unit of GDP. More accurate measures of eco-efficiency

will use alternatives to GDP that are capable of reflecting human progress in an ecological context as the coefficient in eco-efficiency ratios.

A critical issue for business if it is to make a significant contribution to sustainability will be the ability to mobilise sufficient financial resources to make the transition. Important changes are emerging in financial markets where large streams of capital dedicated to 'ethical investment' are stimulating new sustainable business activity. Currently the Australian ethical investment sector totals $10.8 billion and grew by 80% in 2000. The Dow Jones Sustainability Index and other similar indices are showing consistently higher rates of return for investors than traditional indexes. The scale and rate of growth of the global ethical investment sector, and the incorporation of sustainability principles into the investment behaviours of the market in general has enormous implications for the development and transfer of sustainable technologies and businesses.

Government has an important role to play in encouraging the direction of a greater proportion of capital to sustainability. In particular, small and medium size businesses often have difficulty accessing ethical investment funds, and government can play a useful role in linking Western Australian innovations for sustainability with these funds.

The structure of the economy is partly determined by the subsidies and indirect support that has been used to attract and support particular industries. A 1996 study of subsidies by the Commonwealth Government[58] in Australia was able to identify $13.7-14.8 billion that are provided for the use of natural resources. These subsidies are often important in maintaining international competitiveness, supporting new industries and jobs and can enable the state to ensure that the economy moves in a particular strategic direction. However, they also distort the market, and can encourage unsustainable patterns of development.

Through the Department of Industry and Technology and the Small Business Development Corporation, government provides a range of incentives and support measures to assist in the development of business in Western Australia. There is potential to guide the allocation of these measures to promote sustainability.

The government can take a lead in generating the necessary financial reforms and economic policies for sustainability. For example, over the long term government could progressively introduce the the triple bottom line to the State budget, and could develop a full cost accounting system that better reflects the environment and social costs of decisions.

The state government also has significant reserves at its disposal and has the potential to stimulate markets in the way it invests these reserves and in the banking and finance decisions it takes. The Department of Treasury of Finance could examine how it may be able to help drive the shift to sustainability through its financial decisions on issues like reserves, investment and banking decisions.

In short...

Vision

Market forces begin to align more comprehensively with sustainability objectives as subsidies that promote unsustainable behaviour are phased out and incentives to overcome market failures are phased in.

Objectives

- Ensure that economic policy in Western Australia is consistent with the principles of sustainability.
- Stimulate economic responses to sustainability by eliminating financial and market barriers and by providing incentives and motivators.
- Promote innovation by Western Australian businesses and assist in gaining access to the financial resources that are required to develop a strong sustainability based economy.

In short cont'd...

Actions underway include

- Other than in some specific areas, such as in the provision of financial incentives and support for land management and energy efficiency, this area of sustainability policy has been given little attention by government.
- One recent initiative has been the establishment of a new incentives and assistance package to support the retention and management of native vegetation on private land.
- Industry Policy development process is underway.

Proposed actions

6.6 Work in partnership with the financial sector in order to improve investment decisions for sustainability and encourage greater investment in sustainability business opportunities in Western Australia.

6.7 Examine the ways in which subsidies and other financial mechanisms are having positive or negative effects on the health of the environment, society and economy.

6.8 Establish a policy on the allocation of incentives and support measures to ensure that these are supporting sustainability.

6.9 Work progressively to introduce triple bottom line reporting to the state budget.

Indicators and targets

- Ethical investment growth in Western Australia.
- Business investment generated from Sustainability Investment Tours.

Global opportunities

Western Australian financial reform for sustainability can become a model with opportunities in major global development and aid projects.

Further information

Ryan, P. *Supporting Sustainability through socially responsible investing* June 2002http://www.sustainability.dpc.wa.gov.au/CaseStudies/ethicalinvestment/SR1.htm

Commonwealth of Australia (1996) *Subsidies to the Use of Natural Resources* http://www.ea.gov.au/pcd/economics/subsidies/pubs/subsidies1.pdf

Australia Institute (1997) *Ecological Tax Reform in Australia: Using taxes, charges and public spending to protect the environment without hurting the economy* http://www.tai.org.au/Publications_Files/DP_Files/DP10SUM.PDF

> ## ECO-EFFICIENCY AND INDUSTRIAL ECOLOGY

Industrial ecology involves better planning, design and management of industrial activity, so that material, energy and water is not wasted and industrial opportunities are maximised. Industrial ecology requires a completely different approach to industrial development, where industrial facilities are planned, designed and managed to mimic ecological processes.

By employing eco-efficient processes, companies can diminish the costs of production and site operations. The re-engineering of processes along eco-efficient lines is likely to include a reduction in the use of resources, and a reduction in pollution.

World Business Council on Sustainable Development

Cleaner production and eco-efficiency are the most practical starting points for businesses to contribute to sustainable development.

WA Sustainable Industry Group

Our economy tends to separate the production of primary materials from the manufacture of products and the consumption of these products. This is a major barrier to closing the production loop and efficient resource use. There is a need for new policy to ensure product and resource stewardship on the part of industry, government and the consumer.

We must realise that we are part of the ecosystems in which we live and are integral components to the structure and functioning of these ecosystems. For our society to become more compatible with these systems, we need to redesign the way we live to mimic the way in which ecosystems function and preserve the services that the environment provides. We must also recognise that we have limited knowledge of how ecosystems function, and act with caution when interfering with them.

Scientists, engineers and planners are beginning to work collaboratively with local communities to create urban and industrial developments that mimic ecological relationships. This idea of urban and industrial ecology is beginning to illustrate how we can close the loop in the way we consume natural resources. The wastes from one activity can be the raw materials for a range of others resulting in large reductions in the amount of resources required while increasing economic effectiveness. This approach to technology development can also have profound social benefits. Employment opportunities can be boosted, resources saved can be channelled into socially productive activities, and the infrastructure of communities can better service peoples' needs. Increasingly, technology development will occur within this context.

The Western Australian economy uses a large amount of materials, energy and water for every unit of economic production. Preliminary analysis by Curtin University and the Department of the Premier and Cabinet has found that Western Australia has a very large total 'ecological footprint'[59]. On average each Western Australian effectively uses between 17 and 31 ha of land to maintain their standard of living. This is more than double the national average. To be sustainable we should be aiming to reduce the total ecological footprint of our economy by at least half over the next 10-20 years.

The United Nations and the World Business Council on Sustainable Development have established high-level targets for industrialised countries. They have estimated that industrialised countries such as Australia need to achieve a 10-fold reduction in our consumption of resources and a 20-fold increase in resource efficiency by 2040. At the same time there must be rapid transfers of knowledge and technology to developing countries.

While this may appear to be a daunting task for any economy, it is important to put these increases in eco-efficiency into a historical context. In the past 200 years human productivity has increased 200-fold. Large-scale economic change

[59] Ecological footprint is the total resource and waste impacts calculated on a per person basis and converted into a standard for comparison using amount of land required.

often goes unnoticed. Innovation, continual improvement in efficiency and 'technology leap frogging' can drive major shifts in the shape of the economy. A significant part of the challenge is to turn these economic drivers around to focus on protection and repair of the local and global environment, while providing a better, fairer, more equitable and just society. Economic instruments will play a significant role in this process of change.

In short...

Vision

Western Australian industry responds to the global challenge of eco-efficiency and finds new economic opportunities from the expertise gained.

Objectives

- To achieve a four-fold increase in eco-efficiency and to reduce the ecological footprint of the Western Australian economy by a factor of two by 2020.
- To establish institutional and policy measures that support the uptake of industrial ecology and eco-efficiency.

Actions underway include

- Government currently provides financial and other support to Curtin University's Centre of Excellence in Cleaner Production, and the Western Australian Sustainable Industry Group.
- Several government agencies have already signed the Western Australian Sustainable Industry Group's Cleaner Production Statement and are taking steps to become more eco-efficient. The Cleaner Production Statement has been signed by 67 Government departments, businesses and other organisations, and provides a program of action to increase the eco-efficiency of these organisations. This approach is demonstrating that eco-efficiency practices can be employed in all businesses and organisations.

Proposed actions

6.10 Encourage the adoption of the Western Australian Sustainable Industry Group's Cleaner Production Statement by all government agencies as part of their Sustainability Action Plans.

6.11 Work to extend the Kwinana Synergies Project to other industrial precincts in Western Australia.

6.12 Explore the development of an Eco-Industries Section within the Department of Environment, Water and Catchment Protection.

6.13 Expand the promotion and adoption of the successful Industrial Waste Exchange program, and investigate its use as part of the environmental assessment and licensing system.

6.14 Encourage the establishment of sustainable business clusters in Western Australia, primarily based around resource recovery precincts and industrial parks.

6.15 Provide a central information hub with information on sustainable technologies and business solutions on the Sustainability Online website, in conjunction with the Western Australian Sustainable Industry Group, Centre of Excellence in Cleaner Production at Curtin University and Environmental Technology Centre at Murdoch University.

6.16 Ensure that Western Australia implements and actively participates in national eco-labelling programs, such as the standards established by the Australian Environmental Labelling Association.

In short cont'd...

Indicators and targets

Progress toward achieving a four-fold increase in eco-efficiency and a two-fold reduction in the ecological footprint of the Western Australian economy by 2020.

Global opportunities

Eco-efficiency and industrial ecology are major global areas of intense interest and those few places showing innovation will gain access to markets for the services associated with them.

Further information

Ruane, S. *Cleaner Production and Eco-Efficiency: Strategies for improving Sustainability in WA* March 2002
<http://www.sustainability.dpc.wa.gov.au/CaseStudies/cleanerproduction/cleanerproduction.htm>

George,S. Shenton *Sustainability Park: Prospects for an Eco-Industrial Park* June 2002
<http://www.sustainability.dpc.wa.gov.au/CaseStudies/shenton%20sustainability%20park/shentonpark.htm>

Australian Environmental Labelling Association
http://www.aela.org.au/

Curtin University Centre for Cleaner Production
http://cleanerproduction.curtin.edu.au/

Tiwest's Synthetic Rutile Plant in Kwinana has made significant eco-efficiency gains since it began in 1991. In an example of industrial ecology, waste hydrocholoric acid is converted by a neighbouring company into ammonium chloride for use at another Tiwest operation which supplies the pigment plant.

Source: Tiwest

> INDUSTRY SUSTAINABILITY COVENANTS

Government needs to go beyond traditional command and control regulation that minimises harm, and find new ways to encourage business to create economic, environmental and social benefits. The Western Australian Government will seek to do this by entering into 'sustainability covenants' with progressive industry associations and companies.

There is an opportunity for business to move from a paradigm of compliance with community and environmental standards to one in which business is valued for its contribution to improving the community.

Australian Corporate Citizenship Alliance

Partnerships between industry, government and communities are a key way of pursuing sustainability programs.

Rio Tinto

Progressive businesses can drive major changes to more sustainable industry practices. Government has a role in encouraging this by:

• recognising and encouraging the efforts of progressive businesses;

• disseminating information about the activities engaged in by those businesses; and

• encouraging other businesses to rise to the standard set by the leaders in their sector.

In order to do this, the government will adopt a sustainability covenant program.

Sustainability covenants will be non-binding documents entered into between government and progressive companies or industry associations. They will be developed in partnership with local communities and relevant public interest organisations.

Sustainability covenants will cover all aspects of a company or industry's economic, social and environmental performance and will commit the company or industry sector to creating net benefits in each of these areas.

Once produced, sustainability covenants will be published on the Internet and promoted as a model for other businesses.

Companies and industry sectors that sign up to sustainability covenants and meet the obligations in those covenants will be able to 'badge' their products with a logo endorsed and promoted by government.

In short...

Vision

Industry sustainability covenants become a feature of how progressive and innovative businesses in sustainability are recognised and supported.

Objectives

- Recognise and encourage the efforts of progressive businesses to move towards sustainability.
- Disseminate information about the activities engaged in by those businesses.
- Encourage other businesses to rise to the standard set by the leaders in their sector.

Actions underway include

- Specific initiatives have been developed in particular areas, for example the National Packaging Covenant in respect of used packaging materials, but a scheme for comprehensive sustainability covenants is unprecedented.

Proposed actions

6.17 Develop a sustainability covenant program. Sustainability covenants will:
   - be non-binding documents entered into between government and progressive companies or industry associations
   - be developed in partnership with local communities and relevant public interest organisations
   - cover all aspects of a company or industry's economic, social and environmental performance and will commit the company or industry sector to creating net benefits in each of these areas.

Indicators and targets

- Number of sustainability covenants.
- Effectiveness of sustainability covenants.

Global opportunities

Sustainability covenants will help drive industry innovation, and create new technologies and production methods that can be used overseas.

Further information

Victorian Sustainability Covenanting Program
<http://www.epa.vic.gov.au/Waste/resource_efficiency_bill.asp>

Implementation 9

The consultation draft of the State Sustainability Strategy provides an overarching framework for sustainability in Western Australia and identifies specific actions in forty-two priority areas.
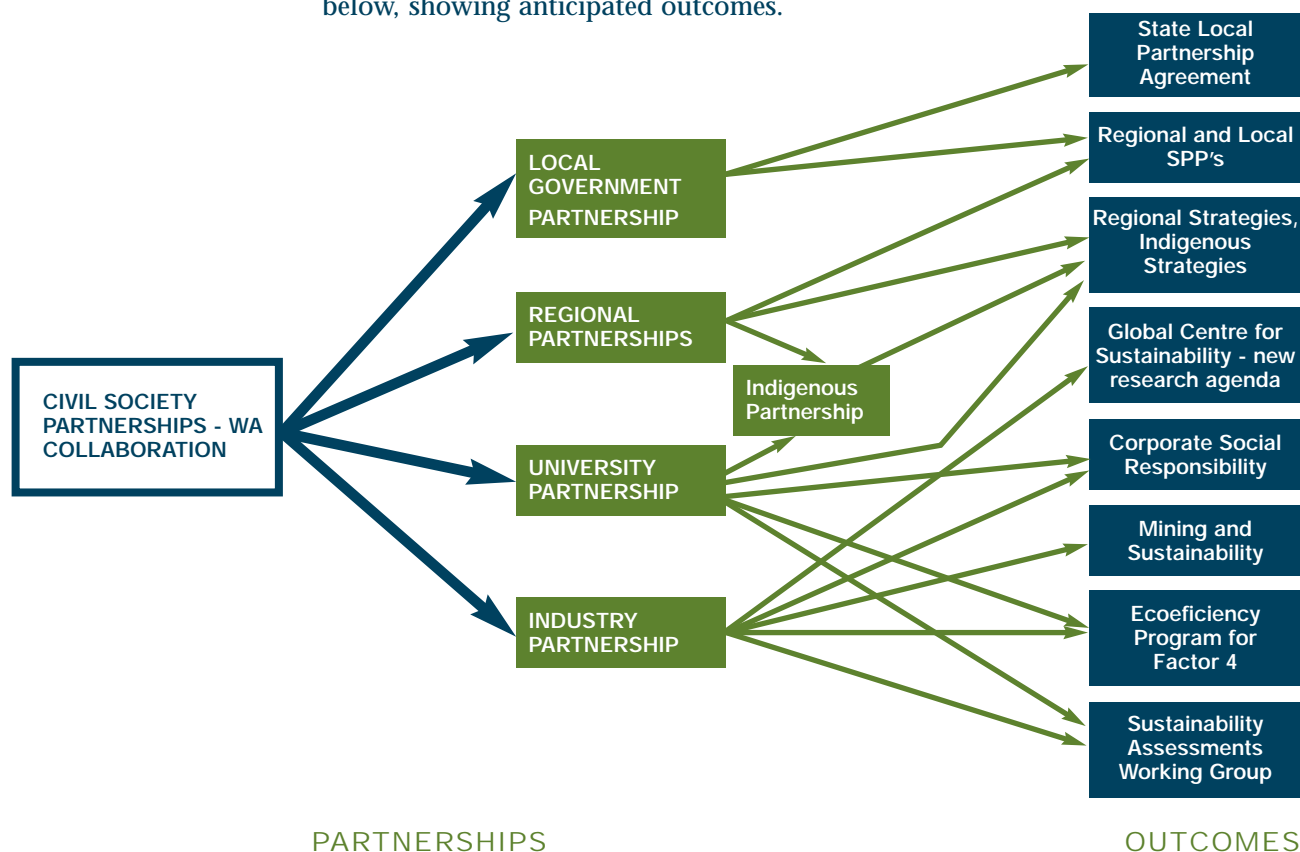
Finalisation of draft Strategy

The Strategy will be finalised over the coming months through a number of processes:

- A consultation process including public comment on the Draft Strategy

- Government agencies developing a Sustainability Code of Practice and Sustainability Procurement Policy.

- A program of partnerships with key stakeholders following the release of the draft Strategy, including:

  - WA Collaboration to assist community organisations in implementing the Strategy and to be involved in all aspects of the other partnerships.

  - Western Australian Local Government Association for the development of a common sustainability framework and partnership agreement across the whole strategy.

  - Regional agencies and communities, including Indigenous groups, to prepare Regional Sustainability Strategies.

  - Universities, TAFE, CSIRO, government and industry R&D groups, to establish the Global Centre for Sustainability.

  - Western Australian industry to apply the work of the World Business Council on Sustainable Development and the Mining Minerals and Sustainable Development initiative to Western Australia and to evaluate how Factor 4 eco-efficiency could be achieved.

  - A Sustainability Assessment Working Group made up of key industry, academic and agency representatives who will further develop the processes of sustainability assessment.

> ## IMPLEMENTATION
>
> A diagram which shows some of these partnerships and their linkages is below, showing anticipated outcomes.

PARTNERSHIPS		OUTCOMES

CIVIL SOCIETY PARTNERSHIPS - WA COLLABORATION

- LOCAL GOVERNMENT PARTNERSHIP
- REGIONAL PARTNERSHIPS
- UNIVERSITY PARTNERSHIP
- INDUSTRY PARTNERSHIP

Indigenous Partnership

- State Local Partnership Agreement
- Regional and Local SPP's
- Regional Strategies, Indigenous Strategies
- Global Centre for Sustainability - new research agenda
- Corporate Social Responsibility
- Mining and Sustainability
- Ecoefficiency Program for Factor 4
- Sustainability Assessments Working Group

Implementation of Final Strategy

Following the finalisation of the Strategy the Government will develop a detailed Implementation Program for the State Sustainability Strategy, specifying the overall institutional arrangements for implementation, who will be responsible for implementing each action, the allocation of resources to the strategy and time frames for implementation. The Implementation Program will also set out a mechanism for monitoring the performance of the Strategy and mechanisms for regular review and update of the Strategy.

The Strategy provides an overarching framework for Government and as such, implementation of the Strategy will also begin through a range of other Government processes and policies.

Overview of Main Implementation Mechanisms

Building on the Sustainability Framework for principles, visions, goals and priorities, these strategies are summarised below to show how the State Sustainability Strategy can be implemented.

Long term visions

Unless there is a vision the people perish

Proverbs 29(18).

The need for vision to help direct government, industry and the community is one of the deepest felt motivations behind the global sustainability movement. This sentiment was a feature of many submissions to the State Sustainability Strategy.

The long term vision and goal for each priority issue has been set out showing how the State Sustainability Strategy has tried to incorporate the sentiments of the submissions from agencies, industry and the wider community into a set of strategies, targets and indicators for government. These visions will guide the implementation process as it tries to develop the strategies.

Sustainability assessment

Sustainability assessment can become a key process for implementing sustainability. The processes of sustainability assessment will need to be learned as Western Australia applies this new approach, but the speed with which industry is already utilising it gives hope that a rapid adoption can occur.

Research

Throughout the State Sustainability Strategy there has been an emphasis on the need for research. These sustainability issues are hard, complex, long-term and involve the need for a new kind of integrated science - now called sustainability science. This is integrative of the natural sciences and is clearly linked with the social sciences. The involvement of CSIRO's Healthy Country initiative and the Global Centre for Sustainability will enable sustainability science to be given a large boost.

Education and training

The need for development of capacity in sustainability has been demonstrated in every issue. Universities, TAFE, professional organisations and schools need to be involved in broad and focussed educational processes for sustainability. Government campaigns may be needed to assist with some issues. Certification or accreditation of professional activity has been specified in particular throughout the State Sustainability Strategy.

Demonstrations

Next steps are always greatly assisted by demonstrations of innovative solutions to sustainability issues. Throughout the State Sustainability Strategy there have been examples of such demonstrations (particularly in the case studies and background papers). Some emerging demonstrations that can be significant steps forward in Western Australia include the 'Reviving the Suburbs' Project and the Aboriginal Country Management Program.

State-Local Government partnership and statutory planning

A key implementation process will be the Roundtable between state and local government involving the WA Collaboration, industry and research interests. Many of the issues considered in the drast Strategy require regional and local resolution. The use of statutory planning processes, often in new areas of application, has been stressed as a tool for implementing sustainability through state and local government statutory planning mechanisms. The main issues requiring greater regional and local resolution, perhaps through Statements of Planning Policy or statutory plans are outlined in Box 43.

BOX 43   POTENTIAL ISSUES TO BE ADDRESSED THROUGH STATEMENTS OF PLANNING POLICY, OTHER STATUTORY PLANNING MECHANISMS OR LOCAL GOVERNMENT PLANS

- Regional Natural Resource Management Strategies
- Regional Biodiversity Corridors
- Regional Ground Water and Drainage Strategies
- Regional Transport Plans
- Regional Heritage and Landscape Values
- Sustainable Building and Construction
- Public Housing, Community Housing and Affordable Private Housing
- Regional Sustainability Rangelands Plans
- Regional Integrated Community Services Plans

Regional Sustainability Strategies and 'Stories'

Regions can draw together the various elements outlined above into their own strategies. The State Sustainability Strategy has suggested this can include an Indigenous Regional Sustainability Strategy as a contribution to Comprehensive Regional Agreements. And most importantly a process is needed to generate regional 'sense of place' documents that tell the 'story' of their region and aspirations for a more sustainable future. This will require the involvement of universities and local communities.

Other strategies and policy instruments

A number of strategies have been gathered into the State Sustainability Strategy from agencies and some new ones developed for solving sustainability issues. These are summarised in Box 44.

A number of other state government processes are occurring that are embedding sustainability principles and making a significant contribution to the implementation of the Strategy. These are also outlined in Box 44.

BOX 44   STRATEGIES AND ACTIONS SUPPORTING THE STATE SUSTAINABILITY STRATEGY.

New strategic planning processes and programs

- State-Local Government Partnership Agreement.
- Regional Sustainability Strategies.
- Indigenous Regional Sustainability Strategies.
- Inland Fish and Aquatic Ecosystem Strategy.
- Building Better Stations
- Perth Bike Plan Update.
- Regional Integrated Community Services Plans.
- Enterprise Facilitation review.
- Sustainable Business Investment Focus.
- Sustainability and Business Roundtable.
- Sustainability Business Investment Tours.
- Aboriginal Country Management Program.
- Sustainability Online.
- Population and Consumption Study.
- Oil Vulnerability-Transport Technology Taskforce.
- Community Code for Revitalisation.
- Greenhouse Offsets Program.
- Action Plan for Tree Farming in Western Australia.
- World Heritage Nomination process for Cape Range Ningaloo.

Existing Initiatives

- State Industry Policy.
- State Strategic Plan.
- Regional Policy.
- State Planning Strategy.
- Regional Natural Resource Management Strategies.
- State Water Strategy.
- State Water Conservation Strategy
- State Greenhouse Strategy.
- State Coastal Strategy.
- Future Perth.
- National Action Plan for Salinity and Water Quality.
- State Bioprospecting Policy.
- ESD Fisheries Assessment Process.
- Fisheries Management Plans.
- Energy Smart Government Program.
- Forest Management Plan.
- BushForever.
- Liveable Neighbourhoods.
- Freight Network Review.
- Perth Air Quality Management Plan.
- WAste 2020.
- Review of Hazardous Waste Management.
- Resource Recovery Precincts Study.
- State BioEnergy Policy.
- Anti Racism Strategy.
- Health Administrative Review.
- Community Arts Program.

Legislation and institutional change

As outlined throughout the strategy there are many things that can be done immediately without the need for legislative and institutional change, including the ongoing role of the Sustainability Policy Unit, the formation of the Sustainability Assessment Units in the Department of Treasury and Finance and Department for Planning and Infrastructure to complement and work with the Environmental Protection Authority. Already changes to the Environmental Protection Act and the Town Planning and Development Act are being made to better reflect sustainability. As the process of implementing sustainability unfolds, further institutional reform may be required, such as sustainability legislation.

Community-oriented facilitation

So much of the transition to sustainability requires government leadership. However real change must also come from the community allowing dreams and energy to be expressed in new ways. Community development has been demonstrated as essential for sustainability and it is therefore important to emphasise the need for community-based change processes. This will require facilitation of the arts that can help us resolve deeper issues in our community as well as discussions on ethics, spirituality and sustainability.

Corporations and businesses that are person-centred, receptive to industrial democracy and develop real partnerships involving the creativity of their work force are good examples of sustainability at work.

It will also be essential for the implementation of this strategy that all government agencies work in a genuine partnership with the community. There is a need for community facilitators to be trained within government so that each area of sustainability can be given community sensitivity and direction.

Government will implement the State Sustainability Strategy with awareness that community sensitivity and a commitment to transparent, participatory processes are essential to achieving sustainability.

Appendixes

Appendixes

> APPENDIX A - SUSTAINABILITY SEMINARS

The Sustainability Policy Unit, Department of the Premier and Cabinet, hosted a seminar series in 2001 entitled Opportunities for sustainability in Western Australia. Most seminar presenters and topics are listed below. The seminar presentations are available on the CD-ROM that accompanies the draft Strategy and the sustainability web site <http://www.sustainability.dpc.wa.gov.au>.

Opportunities for a 'small' State: Reflections on the Welsh Sustainability Scheme
Matthew Quinn
Executive Director, Policy
National Assembly of Wales
Friday, 3 August 2001

Industrial Ecology and Sustainable Resource Processing: Capturing Kwinana Regional Synergies
Dr Joe Herbertson
University of Newcastle and Skye Point Innovation
Former manager BHP
10 August 2001

Economic opportunities in Sustainability
Dr Clive Hamilton
Executive Director, Australia Institute
Senior Lecturer, Public Policy, Australian National University
16 August 2001

The Challenge on the Journey to a Sustainable Future: Surviving or Thriving?
Dr Peter Ellyard
Executive Director of Preferred Futures, Senior Adviser to the United Nations
29 August 2001

Environmental modernisation of China: Opportunities for Western Australia
Professor Mark Diesendorf
Institute for Sustainable Futures, University of Technology Sydney
14 September 2001

Sustainability and Local Place: Case Studies from East London, West Sydney and Rural WA
Mr Alistair Mant
Chair, Socio-Technical Strategy Group in UK
25 September 2001

The ACF Green Building - New Benchmarks, Old Barriers
Dr Peter Brotherton
Director, Sustainable Solutions, ACF Councillor
28 September 2001

The Role of the Earth Charter in Humanising Economic Globalisation - Implications for a Sustainable Australia
Dr Brendan Mackey
Reader in Ecology and Environmental Science, Australian National University
5 October 2001

Corporate Citizenship and Sustainability
Professor David Birch
Director, Corporate Citizenship Research Unit, Deakin University
12 October 2001

Green Jobs in WA: A Report from the Regions
Dr David Annandale
Senior Lecturer in Environmental Assessment, Murdoch University
9 November 2001

International Perspectives on Environment Product Policy and Sustainable Consumption
Professor Chris Ryan
Director, International Institute for Industrial Environmental Economics, Lund University, Sweden

The industry/environment policy landscape in the European Union and Japan - particularly those policies that are driving change.
Assistant Professor Thomas Lindhqvist
Director, Phd Programs, International Institute for Industrial Environmental Economics, Lund University, Sweden
26 November 2001

Greening of Innovation - what's happening, what should be happening?
Professor Ken Green
Director Centre for Research in Organisation, Management and Technical Change
University of Manchester
7 December 2001

Sustainability in Grass Roots Employment Development
Ernesto Sirolli
Director, Sirolli Institute California USA
Passion, entrepreneurship and the rebirth of local economies
12 December 2001

All you ever wanted to know about the State Sustainability Strategy
Professor Peter Newman
Director Sustainability Policy Unit, Department of the Premier and Cabinet, Government of Western Australia
Wednesday 19 December 2001 12 - 2.00pm 2001

> APPENDIX B - SUSTAINABILITY CASE STUDIES

Predominantly Western Australian university students, engaged in sustainability studies, prepared the following sustainability case studies. The case studies are available from the sustainability web site <http://www.sustainability.dpc.wa.gov.au>.

Please note that the Western Australian Government is not responsible for the content or reliability of the sustainability case studies and does not necessarily endorse the views expressed therein.

Agriculture and conservation

Carew-Reid, L 2002, *The Lake Toolibin Recovery Project for a Sustainable Future*, sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/LakeToolibin/LakeToolibin.htm>.

Hart, R 2002, *Preserving the Western Australian Malleefowl*, sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/OilMallee/malleefowl/Malleefowl.htm>.

Holland, K 2002, *Ribbons of Blue: Communities Caring for Water Catchments*, sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/ribbonsofblue/ribbonsofblue.htm>.

McAuley, H 2002, *Cottesloe Reef: Community Managed Natural Resource*, sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/Cottesloe%20Reef/CottesloeReef.htm>.

Merito, T & Ruane, S 2002, *Private Sector Conservation: Assisting Biodiversity,* sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/privatesectorconservation/privatesectorconservation.htm>.

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Garlick, K 2002, *Carers: Putting the Soul Back into Community*, sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/Carer/carers.htm>.

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Samani, S 2002, *The Internet Community Hour: Sustainability and Community-Based Training to Overcome the Digital Divide*, sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/communityinternethour/communityinternethour.htm>.

Stange, L 2002, *Perth City Farm: Cultivating a Vital Urban Community,* sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/cityfarm/cityfarm.htm >.

Education

Bourne, M 2002, *Piney Lakes Environmental Education Centre: an Innovative Project with Multiple Benefits*, sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/PineyLakes/pineylakes.htm>.

Holland, K 2002, *Ribbons of Blue: Communities Caring for Water Catchments*, sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/ribbonsofblue/ribbonsofblue.htm>.

Holland, K, Lewis, T. & Ruane, S 2002, *Sustainability in Schools: Growing Greener Futures for Our Children*, sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/sustainabilityinschools/sustainabilityinschools.htm>.

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Samani, S 2002, *The Internet Community Hour: Sustainability and Community-Based Training to*

Overcome the Digital Divide, sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/communityinternethour/communityinternethour.htm>.

Energy

Carlton, J 2002, *Wind Energy in Western Australia*, sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/windenergy/windenergy.htm>.

Combes, D 2002, *Gas as a Transition Fuel: Western Australia's Natural Alternative,* sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/gasastranstion/gasastransition.htm>.

Garrity, L 2002, *Hydrogen Fuel Cell Buses: The Future for Sustainable Transportation in Western Australia and Around the World*, sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/Hydrogen%20Fuel%20Buses/Hydrogen%20Fuel%20Cell%20Buses.htm>.

Passey, R 2002, *Biodiesel: A Fuel for the Future,* sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/biodiesel/biodiesel.htm>.

Housing and construction

Beyer, D 2002, *Pinakarri Community: An Intentional Co-Housing Cooperative,* sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/pinakarri/PinakarriCommunity.htm>.

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Hart, R 2002, *Housing of the Future: Ellenbrook Solar Housing,* sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/Ellenbrook/ellenbrookhousing.htm>.

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Industry and technology

Bourne, M 2002, *Piney Lakes Environmental Education Centre: an Innovative Project with Multiple Benefits*, sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/PineyLakes/pineylakes.htm>.

Garrity, L 2002, *Hydrogen Fuel Cell Buses: The Future for Sustainable Transportation in Western Australia and Around the World*, sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/Hydrogen%20Fuel%20Buses/Hydrogen%20Fuel%20Cell%20Buses.htm>.

George, S 2002, *Shenton Sustainability Park: Prospects for an Eco- Industrial Park*, sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/shenton%20sustainability%20park/shentonpark.htm>.

Maher, K 2002, *The Environmental Technology Centre: A Case Study for Sustainability*, sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/ETC/environmenttechnologycentre.htm>.

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Alderson, G. & Turner, S. *Moving Towards Sustainability in the City of Gosnells:* A Case Study of a Local Government Addressing the Sustainability Agenda
Leigh, C. Local Government and Sustainability: How the Western Australian Local Government Association is Assisting Local Councils to Adapt to the New Agenda of Sustainability

Menage, X 2002, *Working Towards Sustainability: Local Government Greenhouse Action through the Cities for Climate Protection Campaign*, sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/Greenhouse%20Action/greenhouseaction.htm>.

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Armstrong, R & Head, G 2002, *Liveable Neighbourhoods: Guiding New Developments for a More Sustainable Urban Future,* sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/LivableHoods/LiveableNeighbourhoods.htm>.

Armstrong, R 2002, *Reurbanisation in Perth: East Perth and Subiaco Contributing to a Growing Trend Towards a More Sustainable Perth,* sustainability case study, Department of the Premier and Cabinet, Perth, viewed 15 August 2002, <http://www.sustainability.dpc.wa.gov.au/CaseStudies/Subiaco/Subiaco.htm>.

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> APPENDIX C - BACKGROUND PAPERS

A diverse range of post graduate research students and academics were invited to prepare a background paper exploring a key sustainability issue. In many cases this involved a literature review and meeting with local experts. In addition, community and religious leaders and ethicists were also invited to contribute their views on sustainability.

The background papers are available from the CD-ROM that accompanies the draft Strategy and the sustainability web site <http://www.sustainability.dpc.wa.gov.au>.

Please note that the Western Australian Government is not responsible for the content or reliability of the background papers and does not necessarily endorse the views expressed therein.

Aitkens, L 2002, *Towards a sustainable procurement strategy,* sustainability background paper, Draft State Sustainability Strategy CD-ROM, Department of the Premier and Cabinet, Perth.

Armstrong, R 2002, *Developing a Strategy for Regional Sustainability in the State of Western Australia*, sustainability background paper, Draft State Sustainability Strategy CD-ROM, Department of the Premier and Cabinet, Perth.

Armstrong, R 2002, *Sustainable Community Regeneration: Issues and Opportunities*, sustainability background paper, Draft State Sustainability Strategy CD-ROM, Department of the Premier and Cabinet, Perth.

Bell, S. & Bennett, D 2002, *Regional Benefits of an Integrated Oil Mallee Processing Plant,* sustainability background paper, Draft State Sustainability Strategy CD-ROM, Department of the Premier and Cabinet, Perth.

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Buselich, K 2002, *An Outline of Current Thinking on Sustainability Assessment,* sustainability background paper, Draft State Sustainability Strategy CD-ROM, Department of the Premier and Cabinet, Perth.

Chambers, L 2002, *Sustainable Transport* sustainability background paper, Draft State Sustainability Strategy CD-ROM, Department of the Premier and Cabinet, Perth.

Garrity, L 2002, *The Hydrogen Economy* sustainability background paper, Draft State Sustainability Strategy CD-ROM, Department of the Premier and Cabinet, Perth.

Hawkes, A 2002, *Evolution Towards a Sustainable Transport Energy Source*, sustainability background paper, Draft State Sustainability Strategy CD-ROM, Department of the Premier and Cabinet, Perth.

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Kinnane, S 2002, *Beyond The Boundaries: Exploring Indigenous Sustainability Issues,* sustainability background paper, Draft State Sustainability Strategy CD-ROM, Department of the Premier and Cabinet, Perth.

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Rhodes, A 2002, *The Heart of Sustainability*, sustainability background paper, Draft State Sustainability Strategy CD-ROM, Department of the Premier and Cabinet, Perth.

Robinson, B 2002, *Oil Vulnerability*, sustainability background paper, Draft State Sustainability Strategy CD-ROM, Department of the Premier and Cabinet, Perth.

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Waller, S 2002, *'Walking the Walk': Workplace Sustainability Policy, Program and Actions Within the State Government of Western Australia*, sustainability background paper, Draft State Sustainability Strategy CD-ROM, Department of the Premier and Cabinet, Perth.

Wooltorton, S 2002, *'Education for Sustainability'* sustainability background paper, Draft State Sustainability Strategy CD-ROM, Department of the Premier and Cabinet, Perth.

Ethics Papers

The Anglican Social Responsibilities Commission 2002, *The Ethical Foundation For Planning A More Sustainable Future*, sustainability background paper, Draft State Sustainability Strategy CD-ROM, Department of the Premier and Cabinet, Perth.

Booth, M 2002, *What is the ethical foundation for planning a more sustainable future?*, sustainability background paper, Draft State Sustainability Strategy CD-ROM, Department of the Premier and Cabinet, Perth.

Brady, V 2002, *Ethics and Sustainability*, sustainability background paper, Draft State Sustainability Strategy CD-ROM, Department of the Premier and Cabinet, Perth.

The Buddhist Society of Western Australia 2002, *The Ethics of Planning for Sustainability,* sustainability background paper, Draft State Sustainability Strategy CD-ROM, Department of the Premier and Cabinet, Perth.

Chamarette, C 2002, *Ethics for Sustainability: A suggested Charter for Western Australia,* sustainability background paper, Draft State Sustainability Strategy CD-ROM, Department of the Premier and Cabinet, Perth.

Davison, A 2002, *Sustainability: The ability to sustain "the good",* sustainability background paper, Draft State Sustainability Strategy CD-ROM, Department of the Premier and Cabinet, Perth.

Hallen, P 2002, *Ethics for Sustainability, sustainability background paper*, Draft State Sustainability Strategy CD-ROM, Department of the Premier and Cabinet, Perth.

Islamic Council of Western Australia 2002, *Planning for a Sustainable Future from the Islamic Point of View*, sustainability background paper, Draft State Sustainability Strategy CD-ROM, Department of the Premier and Cabinet, Perth.

Kailis, G 2002, *Spirituality and Sustainability: What is the ethical foundation for planning a more sustainable future?*, sustainability background paper, Draft State Sustainability Strategy CD-ROM, Department of the Premier and Cabinet, Perth.

McDonald, K 2002, *What is the ethical foundation for planning a more sustainable future?,* sustainability background paper, Draft State Sustainability Strategy CD-ROM, Department of the Premier and Cabinet, Perth.

Olley, J 2002, *An Ethic of Mutuality:Some Biblical Perspectives as a Basis and Vision for Sustainable Development*, sustainability background paper, Draft State Sustainability Strategy CD-ROM, Department of the Premier and Cabinet, Perth.

Uniting Church in Australia 2002, *Ethics and Sustainability; Synod Proposal on Environmental Issues; The Rights of Nature and the Rights of Future Generations*, sustainability background paper, Draft State Sustainability Strategy CD-ROM, Department of the Premier and Cabinet, Perth.

> APPENDIX D - LIST OF WRITTEN SUBMISSIONS

The following submissions to the State Sustainability Strategy were received and are available on the enclosed CD-ROM and the sustainability web site <http://www.sustainability.dpc.wa.gov.au/strategy.htm>.

Alan Howgrave-Graham
Alex Growden
Alpha Studios
Amcor Recycling
Andrew G Thomson
Anti-Nuclear Alliance of Western Australia
Astrid Herlihy
Australian Corporate Citizenship Alliance
Australian Petroleum Production & Exploration Association Limited
Bernhard Bischoff
Bicycle Federation of Australia
Bicycle Industries Australia Ltd
Bicycle Transportation Alliance
BioEnergy Australia Ltd
Blackwood Basin Group
BP Australia Limited
Brett Ranford
Brian Bucktin
Brian J Fleay
Bryce Bunny
Cesira Leigh and Glen Ryan
Chamber of Commerce and Industry
Chamber of Minerals and Energy of Western Australia Inc
Chloe Weiter
Christine Heal
Citizens and Civics Unit, Department of the Premier and Cabinet
City of Belmont
City of Gosnells
City of Joondalup
City of Mandurah
City of Perth
City of Stirling
City of Swan
Clint Garrett
Clive Malcolm
CMS Energy
Coastal Planning Coalition
Community Anti-Nuclear Network of Western Australia
Community Arts Network (WA) Inc
Conservation Commission of Western Australia
Cornelia Major
CSIRO
Curriculum Council
Cyclists Action Group
Daniel van Mens
Danielle Brown
Darralyn P Ebsary
Denmark Environment Centre Inc
Department for Community Development
Department for Planning and Infrastructure
Department of Agricutlure
Department of Conservation and Land Management
Department of Consumer and Employment Protection
Department of Culture and the Arts
Department of Education
Department of Environment, Water and Catchment Protection
Department of Fisheries
Department of Housing and Works
Department of Indigenous Affairs
Department of Land Administration
Department of Local Government and Regional Development
Department of Training
Diane Matthews
Disability Services Commission

Donna Elliott
Eastern Metropolitan Regional Council
EcoTown Inc
Edmund Rice Centre Environmental Task Force - Notre Dame Campus Group
Edward J Nieman
Ellen Brook Integrated Catchment Group
Energy-Visions Pty Ltd
Environmental Protection Authority
Environmental Technology Centre
Forest Products Commission
Frank Hawkes
Fremantle Port Authority
Gary Luck (Dr)
Gascoyne Development Commission
George P Kalis
Gerard Mullen
Global Renewables Limited
Graham Chittleborough (Dr)
Green Edge Solutions Pty Ltd
Greening Australia Western Australia
Guilderton Community Association Inc.
Guy Izzett
H2Only Purified Drinking Water
Halliburton KBR
Heal the World Incorporated
Heather Lamont
Heritage Council of Western Australia
Housing Industry Association Limited
Ideas Unlimited
Indigenous Heritage Unit, Department at Conservation and Land Management
J de la Hunty
J.E. Wajon (Dr)
Jack Fox
Jan Star
Jane Bradfield, Cathy Craigie, Julie Nyland
Jeanette Conacher
Jo Pepper
Jodi Ogilvie
John McBain
John Snowden
Judy Blyth
Judy Forsyth
KG and IC Johnson
Karyn Walsh
Kate Akerman
Kath Mathwin
Keith Jones
Kim Reid
Kimberley Land Council
LandCorp
Lindsay Snow
Lisa Clarke
Main Roads Department
Margaret Carmody
Mary Gray
Master Plumbers and Gasfitters Association of WA
Maxine Dawson
Men of The Trees
Michael Hegarty
Michael James Newman
Michal Lewi AM
Mike Norman
Motor Trade Association of Western Australia (Inc.)
Nyungah Circle of Elders
Office of Water Regulation
Ord Land and Water Inc
Organic Growers Association WA Inc
Otto Mueller
Ove Arup Pty Ltd

Park Farm Working Party and Korang Mia Committee
Paul Loring
Peel Preservation Group (Inc)
Penny Chadwick
Perth Energy
Perth Zoo
Peter Ravine
Peter Wilmot
Phillip Sharp
Physical Activity Taskforce
Planit Earth Project, Inc.
Plastics and Chemicals Industries Assocation
Quinns Rocks Environmental Group
R & S Cleverley
Richard Smith (Dr)
Rio Tinto
Roadside Conservation Committee
Robin Chapple MLC
Robin Collin (Dr)
Rosa De Graaf
Royal Australian Planning Institute
Ruah Community Services
Ruth Balding
Save Ningaloo Campaign
Shelter WA and Community Housing Coalition of WA
Shire of Serpentine-Jarrahdale
South Coast Environment Group
South West Catchments Council
South West Development Commission
South West Environment Centre
State Development Portfolio Policy Unit
State Records Office of Western Australia
State Salinity Council
Steven Reynolds
Stuart Anthony Hawkins

Subiaco Bicycle User Group
Sustainable Energy Development Office
Sustainable Population Australia Inc
Swan Catchment Council
Sylvia Tetlow
Tad Zalewski & Associates
Teresa Tompkins
The Environmental Alliance
The FV&D4OP Collective
The Institution of Engineers Australia
The National Trust of Australia (WA)
The Royal Automobile Club of W.A. (Inc)
The WA Sustainable Industry Group
Timber 2002 Incorporated
Tony Pedro
Town of Cottesloe
Victorian Bicycle Coalition
Volunteering WA
WA Association for Mental Health
Water Corporation
Western Australian Council of Social Service Inc
Western Australian Local Government Association
Western Australian Museum
Western Australian Naturalists Club (Inc)
Western Australian No-Tillage Farmers Association (inc)
Wetlands Conservation Society (Inc)
World Wide Fund for Nature Australia

List of Proposed Actions

> **SUSTAINABILITY ASSESSMENT**

1.1 Establish transitionary arrangements for sustainability assessment including the establishment of a Social Assessment Unit in the Department for Planning and Infrastructure and an Economic Assessment Unit in the Department of Treasury and Finance. Capacity to address sustainability will also need to be developed within all relevant agencies.

1.2 Establish an Industry-Government Working Group on Sustainability Assessment to further develop processes and practices.

> **INSTITUTIONAL CHANGE**

1.3 Require the Sustainability Policy Unit to:
- support sustainability assessment
- assist agencies in implementing the State Sustainability Strategy within their own areas of responsibility
- coordinate sustainability reporting across government
- provide general policy advice on sustainability and monitor implementation of the State Sustainability Strategy
- support regular communication and information exchange for capacity building in sustainability across the public sector
- provide community education programs on sustainability including the State Sustainability Strategy process.

1.4 Assist relevant agencies to incorporate sustainability capacity into their policy functions, enabling a network across government to achieve a 'whole-of-government' perspective on sustainability.

> **EMBRACING SUSTAINABILITY IN GOVERNMENT AGENCIES**

1.5 Incorporate sustainability principles and practices into the legislation administered by relevant government agencies as it comes up for review or drafting.

1.6 Develop a Sustainability Code of Practice in consultation with government agencies to provide direction and guidance for how government agencies should plan for, manage, report on and operationalise sustainability. The Sustainability Code of Practice will require agencies to create Sustainability Action Plans in order to put these programs into practice. A Sustainability Resource Guide will be developed to assist agencies in this process.

1.7 The Sustainability Code of Practice and Action Plan will incorporate a number of initiatives across government including requirements for:

- sustainability assessment
- agency policies and decision making to incorporate sustainability
- procurement policy
- the Energy Smart Government Program
- reducing vehicle use through individualised travel management processes
- improving vehicle fuel efficiency and demonstrating the use of gas, hydrogen and biodiesel bus demonstrations
- investigate how the government vehicle fleet and the electric train system can reduce greenhouse gases by purchasing equivalent carbon credits from Western Australian carbon sequestration projects
- working towards achieving zero waste by 2020 and increasing recycling
- reducing water use as outlined in the draft State Water Conservation Strategy
- demonstrating sustainability innovation in building design and construction
- purchasing renewable energy for an increasing proportion of electricity requirements in the most cost effective manner
- ensuring transparent, participatory and engaging public processes are embedded in all aspects of agency activity.

> **PARTNERSHIPS FOR ACTION**

1.8 Establish a partnership with local government (represented by the Western Australian Local Government Association) to create a State-Local Government Common Sustainability Framework consisting of common principles, goals, approaches, and programs. It will build on the sustainability framework outlined in this strategy. This framework will be formally set out in a partnership agreement.

1.9 Support a State-Local Government Sustainability Roundtable to create the partnership agreement and its implications for local government sustainability. The Roundtable will explore the role of regional councils (groups of local government) in supporting sustainability, the implementation by individual local government and the role of state government in enabling local governments to fulfill these roles. Involve the WA Collaboration in the roundtable as well as industry and research interests.

1.10 Work with the WA Collaboration and industry stakeholders to implement the State Sustainability Strategy through similar partnership processes.

1.11 As part of the State-Local Government Roundtable examine the issue of how assessment can create a better process for involving local government in large development projects.

> **PLANNING FOR SUSTAINABILITY**

1.12 Work with local government, industry and community through the State-Local Government Roundtable to investigate the application of statutory planning and other processes in support of sustainability outcomes. Statements of Planning Policy can be developed and then be given legal effect through adoption by the Western Australian Planning Commission and state government. Once adopted, Statements of Planning Policy will guide the actions of Local Government and State Government agencies.

1.13 Support the increased involvement of local government in planning for natural resource management generally, including issues of agricultural sustainability, particularly regional drainage, biodiversity conservation, regional revegetation programs and water quality. As part of the State-Local Government Partnership Agreement explore opportunities for regional councils and local councils and statutory planning processes (such as Statements of Planning Policy and Environmental Protection Policies) to support natural resource management outcomes, including the possibility of adopting regional natural resource management strategies through Statements of Planning Policy.

1.14 Establish a Strategic Alliance for Sustainability within the Department for Planning and Infrastructure to assist in the implementation of new initiatives related to planning that are proposed in the State Sustainability Strategy.

1.15 Conduct a 'Planning for Sustainability Forum' in November 2002 to establish principles and processes for implementing sustainability across the planning and infrastrucure portfolio.

> **SUSTAINABILITY IN THE REGIONS**

1.16 Develop Regional Sustainability Strategies. These strategies will provide an opportunity to apply the broad framework of the State Sustainability Strategy with Regional Councils and local government through Statements of Planning Policy and other statutory and non-statutory instruments, as described throughout the Strategy. These strategies will build on regional natural resource plans, regional development plans and Indigenous regional sustainability strategiesl They will create regional 'sense of place' stories and future aspirations for regions. Regions will be defined across the state and within the city.

1.17 Take account of the role of Regional Development Commissions in supporting sustainability as part of the review of the *Regional Development Commissions Act 1993*. The Regional Development Commissions will also be invited to contribute to the development of Regional Sustainability Strategies.

1.18 Conduct Sustainable Business Investment tours to attract investment (including 'ethical' investment).

> **INDIGENOUS COMMUNITIES AND SUSTAINABILITY**

1.19 Develop Indigenous Regional Sustainability Strategies that will feed into the Regional Sustainability Strategies and regional agreements as set in the Statement of Commitment to a New and Just Relationship jointly agreed by the Western Australian Government and the Aboriginal and Torres Strait Islander Commission.

1.20 Pilot an Indigenous Country Management Program (also known as community ranger schemes) to enhance long-term employment for Indigenous people in their regions. Trial programs will be undertaken using the Department of Conservation and Land Management and functioning Aboriginal Land and Sea Management programs.

1.21 Assist Indigenous communities to establish keeping places and interpretive centres to preserve and showcase Indigenous culture and support the intellectual property rights of Indigenous communities and artists.

1.22 Expand Indigenous Cross-Cultural Awareness Training within the Western Australian Public Sector for all employees who have involvement with Indigenous people or are involved in Indigenous policy.

1.23 Work with Indigenous and industry stakeholders to promote targets for Indigenous employment in major new resource development projects.

1.24 Continue to work to enhance housing and health programs for Indigenous Western Australians.

> **RESEARCH AND DEVELOPMENT FOR SUSTAINABILITY**

1.25 Assist in the development of the Global Centre for Sustainability as a partnership for sustainability research and development in Western Australia. The Global Centre for Sustainability would facilitate partnerships between the 5 universities, TAFE, the CSIRO, the State Government

and industry on globally significant sustainability projects.

1.26 Continue to support bids for Commonwealth funding for CRC's and other research funding programs related to sustainability.

1.27 Through the Science Council, Office of Science and Innovation and with all relevant research and development groups (including CSIRO), determine research priorities and partnerships in sustainability research and development, including social science aspects.

1.28 Endorse the CSIRO's commitment to implement the Healthy Country initiative in the South West of Western Australia.

> **SUSTAINABILITY INFORMATION ONLINE**

1.29 Work to establish Sustainability Online to deliver the government's election commitment to establish a 'one-stop-shop' for sustainability information. Sustainability Online will be accessible to the public through the internet and will list and integrate environmental, economic and social data from a range of sources including community data collected by local groups, schools and universities.

> **RECOGNISING SUSTAINABILITY EXCELLENCE**

1.30 The Government will create an Annual Sustainability Award to recognise significant achievement in sustainability.

Contributing to global sustainability

> **POPULATION, DEVELOPMENT AID AND ENVIRONMENTAL TECHNOLOGY**

2.1 Help create the Global Centre for Sustainability to bring Western Australian expertise into global development projects through a partnership between the five universities, TAFE, the CSIRO, industry research and development and government agency research and development in sustainability.

2.2 Assist government agencies where appropriate to be positioned to win or participate in projects in developing countries.

2.3 Promote Western Australian environmental technologies in global trade through the Environmental Industries Unit within the Department of Industry and Technology.

2.4 Facilitate research and development in environmental technology through the support of new and continuing Centres of Excellence and Cooperative Research Centres.

2.5 Conduct a study on the relationship between Population and Consumption in Western Australia (as recommended by the 1998 Western Australian State of the Environment Report).

> **MAINTAINING OUR BIODIVERSITY**

2.6 Reaffirm Western Australia's commitment to global treaties on biodiversity and the National Strategy for the Conservation of Biological Diversity and establish a long-term monitoring and reporting program to demonstrate that the State is fulfilling its global biodiversity conservation obligations.

2.7 Introduce a new Biodiversity Conservation Act for Western Australia supported by a Biodiversity Conservation Strategy that outlines reserve requirements and links between them.

2.8 Nominate the Cape Range-Ningaloo area for inscription on the World Heritage List in recognition of its universal natural and cultural heritage values and intactness.

2.9 Facilitate nature-based recreation and tourism and Western Australia's 'sense of place' including through the marketing of the state's special biodiversity status.

2.10 Establish a plan for a Biodiversity Research Consortium bringing together the research and databasing capacity of the Department of Conservation and Land Management that includes the Western Australian Herbarium, the Western Australian Museum, and the Botanic Gardens and Parks Authority and to improve opportunities for synergies. Biodiversity conservation research programs within the consortium partner organisations should continue to receive strong support.

2.11 Plan a major science-education facility that can assist in the education of the community on Western Australia's biodiversity and its foundation in geodiversity (Biosphere West Project).

2.12 Create a State Bioprospecting Policy for ensuring native plant based industries are developed sustainably and with benefits accruing to the State.

2.13 Complete the Biological Survey of Western Australia by 2015.

2.14 Continue to support the national program to manage marine pest incursions into Western Australia and limit the spread of existing pests.

> **RESPONDING TO GREENHOUSE AND CLIMATE CHANGE**

2.15 Establish a voluntary program of Greenhouse Offsets to assist large development projects to reduce greenhouse gas emissions by investing in energy efficiency, renewable energy, carbon sequestration or other accredited projects in Western Australia.

2.16 Continue to require companies involved in major projects assessed by the Environmental Protection Authority, to minimise and report on greenhouse emissions.

2.17 Facilitate a carbon sequestration facility through the Forest Products Commission to exploit the new market of carbon credits from the new carbon rights legislation.

2.18 Investigate the potential for reducing greenhouse emissions for the government vehicle fleet and the electric train system.

2.19 Maintain the commitment to ensuring that greenhouse is a significant factor in power decisions.

2.20 Provide mechanisms in the electricity market structure for encouraging renewable energy and distributed generation, which could include incentives to reduce line losses and providing priority dispatch for renewable energy in any trading market.

2.21 Establish an Adaptation Strategy for Climate Change with the Department of Conservation and Land Management, CSIRO Healthy Country and other relevant agencies.

2.22 Establish a carbon accounting system in accord with national and international systems to enable better understanding of greenhouse across government and the potential for various policy options.

2.23 Create greenhouse accreditation for carbon accounting for carbon rights.

> **OIL VULNERABILITY, THE GAS TRANSITION AND THE HYDROGEN ECONOMY**

2.24 Establish a Taskforce to examine issues to do with oil vulnerability, the gas transition and the Hydrogen economy.

Sustainable use of natural resources

> **SUSTAINABLE AGRICULTURE**

3.1 Develop regional targets for sustainable resource use for incorporation into regional natural resource management plans.

3.2 Support diversification and landscape scale change towards sustainable land uses.

3.3 As part of the State-Local Government Partnership Agreement, establish Regional Councils and other processes that can meaningfully involve local government in issues of agricultural sustainability, particularly regional drainage, biodiversity conservation, regional revegetation programs, water quality and soil acidity. Local governments could then incorporate regional sustainability priorities into their local town planning schemes.

3.4 Continue to develop the government's policy on GM Food crops and the preparation of state gene technology legislation in consultation with the community.

3.5 Encourage the development of an aquaculture industry using saline waters to utilise land and waterways affected by salinity.

3.6 Improve the coordination of fox and feral animal control programs in regions to focus on core areas of regeneration and conservation where at-risk wildlife can be protected. The involvement of local government and farmers can be coordinated through the State-Local Government Partnership Agreement.

3.7 Develop with industry participation, standards and best practices for agricultural systems at regional and enterprise scale to provide the basis for accreditation of sustainable agriculture practices and to support regulatory processes.

3.8 Investigate economic incentives and innovative instruments such as biodiversity offsets, integrated ecosystem services trading, tax incentives and environmental stewardship rebates as well as land purchase, as drivers of land use change towards more sustainable use.

3.9 Investigate the application of the EMU Plus process developed in the rangelands as a means of empowering farmers and catchment groups, building capacity, facilitating change and leveraging private investment towards sustainable agriculture.

> **SUSTAINABLE FISHERIES AND AQUACULTURE**

3.10 Develop social and economic aspects of sutainability to integrate with environmental assessments completed on all Western Australian fisheries.

3.11 Develop a Marine Planning Strategy, including a cross-agency framework for integrated marine planning to ensure that marine and estuarine resources are adequately protected and managed across all habitats, within a bioregional framework. This framework should enable increased collaboration between catchment and land management agencies to manage resulting impacts on the marine environment and fisheries.

3.12 Develop a long-term Inland Fish and Aquatic Ecosystem Strategy to rehabilitate freshwater ecosystems of the South West to conserve the biodiversity of the state's freshwater fish stocks.

3.13 Continue to implement the Wilson Report recommendations to establish additional marine parks and reserves system with provision for substantial and well-designed sanctuary zones, so that all marine bioregions have representative reserves by 2020.

3.14 Continue to establish fish habitat protection areas to complement the marine park and reserve system.

3.15 Prepare and implement regional recreational fisheries management strategies and regional fisheries environmental reviews and plans.

3.16 Continue targeted community education programs to promote fisheries and marine conservation based at the new fisheries research institute and the Aquarium of Western Australia.

> **SUSTAINABLE FORESTRY AND PLANTATIONS**

3.17 Continue to support restructuring of the timber industry, giving particular support to value-adding opportunities in the timber processing and wood working areas.

3.18 Promote the efficient use of all logs, development of high value-added timber utilisation, and harvesting rotations based on maintaining the full range of forest values including saw log production.

3.19 Actively support the Action Plan for Tree Farming in Western Australia for the further development of a plantation industry on previously cleared agricultural land within the guidelines being developed by the Western Australian Planning Commission to retain viable rural communities. Particular attention should be given to production of sawlogs as a substitute for the declining yield from native forests.

3.20 Continue to consult with communities over the final boundaries on the 30 new National Parks in old growth forests.

3.21 Review the sandalwood industry in Western Australia, the present and projected resource availability, the manner and pattern of exploitation of the resource, and the role that it might play in regional development and ecologically sustainable management of the rangelands. Develop a sandalwood management plan that is consistent with principles of Ecologically Sustainable Forest Management.

3.22 Seek to minimise the loss of natural values from State Forests and Timber Reserves and all other reserve categories within the South West as a consequence of the extraction of low value bulk commodities such as sand and gravel.

3.23 Create a comprehensive Dieback Strategy including how to:
- Establish and maintain a comprehensive database on the distribution of *Phytophthora* species throughout the South West, and use this to ensure that future timber harvesting operations and other activities do not lead to the spread of these pathogens.
- Develop and implement rehabilitation plans for selected diseases-affected areas.
- Ensure the Western Australian nursery industry follows best-practice hygiene procedures to eliminate *Phytophthora* species from all seedlings and propagating material.

- Work with relevant Commonwealth agencies to prevent the introduction of new plant diseases into Australia that could impact on the forests and forestry industry.
- Develop an education program for the general public, and private and public organisations whose activities involve use of land in dieback susceptible areas.
- Support the establishment of a Centre of Excellence for *Phytophthora* research into ecological impacts on key elements of the biota, methods of managing and counteracting impacts of diseases, and monitoring spread.

3.24 Continue to develop skills in production and marketing of fine timber products made from specialty native hardwoods.

3.25 Support accreditation of forestry and plantations as an important part of maintaining sustainable forest management in Western Australia.

> **SUSTAINABLE MINING AND PETROLEUM PRODUCTION**

3.26 Work towards sustainability assessment of state significant projects using sustainability criteria (consistent with the Keating Review).

3.27 With key stakeholders, develop a set of agreed Sustainability Operating Principles for the Mining Sector, including consideraton of the Mining Minerals and Sustainable Development Principles recently outlined through the Global Mining Initiative through a working group managed through the Department of Minerals and Petroleum Resources.

3.28 Foster local community involvement (particularly Aboriginal communities, pastoralists and local shires) as part of the sustainability assessment process.

3.29 Establish transparent processes to enable community awareness of the regulatory system for mining and minerals processing.

3.30 Work with industry on the development of voluntary accreditation for mining sustainability.

3.31 Provide financial support for the Cooperative Research Centre in Sustainable Minerals Processing as well as the Cooperative Research Centre in Sustainable Mine Lakes and the Cooperative Research Centre in Greenhouse Gas Technologies, should they be successful in the Commonwealth CRC funding round.

> **SUSTAINABLE TOURISM**

3.32 Facilitate nature-based recreation and tourism and Western Australia's 'sense of place' including through the marketing of the state's special biodiversity status and cross-state walk trails.

3.33 Develop cultural tourism opportunities through the Western Australian Tourism Commission's Sustainable Product Development Unit to integrate social aspects of sustainability, for example, Indigenous walking tours, cultural history experiences and arts events as well as 'sense of place' markers.

3.34 Support the expansion of existing sustainable tourism accreditation in Western Australia.

3.35 Support the application of appropriate accreditation to a local government area as a way of demonstrating area-wide tourism sustainability.

> **PROTECTING AQUATIC SYSTEMS**

3.36 Protect water dependent ecosystems while allowing for the management of water resources for their sustainable use and development to meet the needs of current and future users.

3.37 Ensure that the full social, environmental and economic values of aquatic systems and the impacts of development are taken into account in decision making and planning processes.

3.38 Identify the environmental values and designate environmental quality objectives for all of the State's aquatic systems and embed these within Environmental Protection Policies.

3.39 Increase the scientific understanding of aquatic systems to derive environmental quality criteria for the state's aquatic ecosystems to act as benchmarks to assess where the objectives are met or not met and management action is required.

3.40 Ensure that activities in catchments are actively managed to ensure that environmental values of downstream environments are not compromised degraded or destroyed through management, community partnerships and legislation.

3.41 Continue the work of the State Wetlands Coordinating Committee in ensuring the State Wetlands Conservation Policy is implemented.

3.42 Continue the process of nominating significant wetlands for inclusion on the Ramsar Convention list of Wetlands of International Importance.

3.43 Ensure the protection of our wild and scenic rivers and develop management plans, in partnership with Indigenous peoples, for the safeguarding of these unique river systems.

3.44 Investigate innovative mechanisms for ensuring sustainable use of catchments, such as transferable development rights, pollution offset schemes and integrated property management plans for accredited water cycle management.

> **SUSTAINABLE COASTAL AND MARINE ENVIRONMENTS**

3.45 Progressively identify the environmental values and designate environmental quality objectives for all of the state's marine ecosystems.

3.46 Obtain the scientific understanding to derive environmental quality criteria for all of the state's marine ecosystems to act as benchmarks to assess where the objectives are met or not met and management action is required.

3.47 Reinforce and promote the principles of best management practice in coastal and marine management and continuous improvement for existing activities and ensure they are demonstrated for new proposals.

3.48 Recognise and consider the potential for cumulative impacts and synergistic effects of multiple activities in environmental impact assessments of new proposals and in the management of ongoing activities.

3.49 Evaluate the findings of the North West Shelf Joint Environmental Management Study in terms of a decision-making strategy based on the principles of sustainability.

3.50 Develop a State Coastal Strategy and a State Marine Planning Strategy with appropriate consultation.

> **SUSTAINABLE RANGELANDS MANAGEMENT**

3.51 Establish a Rangelands Working Group of the Natural Resource Management Council to develop a comprehensive vision of the rangelands and advise government of the priority sustainability issues requiring consideration.

3.52 Complete the review of pastoral lease boundaries in relation to biodiversity values through the Pastoralism for Sustainability Working Group.

3.53 Review the arrangements for managing unallocated Crown land within the rangelands to ensure that future arrangements adequately recognise the biodiversity conservation values of those lands.

3.54 Develop a Regional Council of Local Governments in the Gascoyne-Murchison area and create a Statement of Planning Policy on Sustainable Rangeland Management as a demonstration for other regions.

3.55 Further develop the Environmental Management Systems currently being trialed within the Gascoyne-Murchison Strategy Regional Environmental Management Program to provide a framework for accreditation of sustainable pastoralism in the rangelands.

3.56 Encourage universities to do more research and teaching on sustainable rangeland management in recognition of its significance in Western Australia, especially on capacity building for the EMU Plus program.

Sustainability and settlements

> ### MANAGING URBAN AND REGIONAL GROWTH

4.1 Facilitate projects to provide sustainability gains for country towns including regional Sustainability Strategies that build on the 'sense of place' stories of each community.

4.2 Encourage employment initiatives such as small business incubator projects as a catalyst for 'growing' job opportunities in outer metropolitan urban areas.

4.3 Use Future Perth processes as a mechanism to generate region-wide community debate on urban growth and test implementation options to achieve optimal employment, residential and centre location and to reduce urban sprawl.

4.4 Develop strategies to proactively manage the location of urban development, including consultative agreements with local government on land release and using the Metropolitan Development Program and the Country Development Program to match land supply to the cost-efficient provision of infrastructure.

4.5 Progressively implement Bush Forever.

4.6 Protect designated groundwater mounds from incompatible developments and use water sensitive urban design (see *Our water future*) to rehabilitate urban wetlands.

> ### REVITALISING DECLINING CENTRES AND SUBURBS

4.7 Develop a 'Reviving the Suburbs' initiative to revitalise declining suburbs based on community processes, innovative urban design, public–private housing ventures, co-location of services, improved infrastructure and community arts projects.

4.8 Trial 'Reviving the Suburbs' in partnership with a local government.

4.9 On the basis of this trial create an urban design Community Code for Revitalisation.

4.10 Enable more targeted government intervention and investment into local government areas of decline and opportunity though ongoing revitalisation programs.

4.11 In consultation with local government, progress higher density residential development by linking the provision of government infrastructure (infill sewerage program and underground power) and services (expansion of public transport) with commitments to local urban consolidation.

4.12 Research the techniques of urban revitalisation and their relevance to Perth in the context of the 'Reviving the Suburbs' trial.

> ### INTEGRATING LAND USE AND BALANCED TRANSPORT

4.13 Move towards requiring all government and significant residential development projects to adopt the framework which has been used in the Liveable Neighbourhoods.

4.14 Examine pedestrian needs on all local streets and in town centres to create pedestrian friendly environments.

4.15 Update the Perth Bicycle Plan and work closely with local Bicycle User Groups to better resolve local and regional bicycling issues and assist with the provision of safe local bicycle routes, shared paths and end of trip facilities to encourage children to cycle and walk to school.

4.16 Build on the new metropolitan rail system by integrating all other transport modes to feed into it and actively prioritise new station precincts where better integration is possible.

4.17 Research and document vehicle trip behaviour to establish planning implications.

4.18 Research parking demand at suburban centres.

4.19 Develop programs that increase mixed-use development in strategic and other regional centres with good public transport provision.

4.20 Encourage local government to provide for flexibility in residential zoning, which allows small businesses and 'corner shop' retail facilities to locate in existing suburban communities.

4.21 Encourage flexibility in local government parking policy in areas where there is good public transport.

4.22 Review and update the Metropolitan Transport Strategy to accommodate the doubling of the metropolitan rail system, integrated bus, pedestrian and cycle networks and potential future upgrading.

4.23 Investigate the extension of Australian Design Rules to cover noise and other environmental issues for all vehicles.

4.24 Work to remove inequity of taxation treatments and salary packaging arrangements that impact on public transport usage.

4.25 Within the Department of Planning and Infrastructure establish and implement a whole-of-portfolio Integrated Funding Framework to enable integrated landuse and transport planning and balanced multi-modal transport for sustainability objectives.

4.26 Expand research and training on the integration of transport and landuse for more balanced transport outcomes and make this a component of the proposed Masters in Transport Studies being established between the universities.

> **MANAGING FREIGHT AND REGIONAL TRANSPORT**

4.27 Implement the Freight Network Review including the switch to rail freight in the Fremantle Port from 3% to 30% of all containers, the more efficient use of trucks through modal interchange nodes and an acceleration of strategic planning for the Outer Harbour.

4.28 Extend the Freight Network Review principles and concepts to the whole state.

4.29 Develop a mechanism to manage conflicts between freight and residential activity, using zoning options to create incentives for property owners and site management options where necessary.

4.30 Encourage the expansion of freight rail infrastructure to effect modal change.

4.31 Ensure that all complex and contentious road and rail planning is done using sustainability techniques such as the multi criteria analysis process developed for the review of Roe Highway, the citizen jury approach used for Reid Highway and landuse/transport modelling (see *Sustainability and governance: Sustainability assessment*).

4.32 Develop a long-term strategy for country passenger rail.

4.33 Create Regional Transport Plans with Regional Councils for freight and passenger services in country and city regions.

> **PRESERVING AIR QUALITY**

4.34 Continue implementation of the Perth Air Quality Management Plan, focussing on coordinated action to ensure Perth is the cleanest city for its size in the world.

4.35 Develop a Statement of Planning Policy for Integrated Land Use Planning and Transport that demonstrates, among other things, how local planning can minimise air pollution. This is a matter that could be progressed through the State-Local Government Partnership.

4.36 Continue to provide community information and education to change behaviour, especially on the burning of domestic wood fires and to encourage a shift to non-car modes of transport.

4.37 Define and resolve the linkages, potential conflicts or competing interests between air quality issues and Greenhouse issues.

4.38 Continue to monitor the air quality criteria set by National Environmental Protection Measures.

4.39 Continue to develop air quality guidelines and standards through national forums and further develop methods for assessing the impacts of air quality on human health and the environment.

4.40 Undertake cost benefit analysis of air quality decisions (i.e. the environmental and social cost of actions and decisions to assist in sustainability assessments).

> **REDUCING AND MANAGING WASTE**

4.41 Continue to work towards a zero waste society and recognise the success of those regional councils who are showing how this can be achieved.

4.42 Explore the opportunities for increased engagement in sustainable waste management by local government and the Waste Management Board through the State-Local Government Sustainability Roundtable.

4.43 Introduce and enact the Waste Management and Contaminated Sites Bills.

4.44 Require the Waste Management Board to prepare a detailed plan for each waste stream outlining how Western Australia will achieve the goal of zero waste.

4.45 Encourage the use of recycled products by all government agencies, and the recycling of paper, glass, plastics, metals and organic waste, as part of government's Sustainability Procurement Policy and Sustainability Code of Practice.

4.46 Require all Regional Organisations of Councils, or Local Government Authorities, to prepare waste management plans.

4.47 Examine how the Waste Management Board's waste levy can better reflect environmental and social costs of the environmental and social costs of waste disposal.

4.48 Encourage all government agencies to reduce consumption and waste by undertaking a comprehensive audit of resource consumption and waste and setting targets for reductions.

4.49 Set mandatory hazardous waste targets for hazardous waste facilities and target cleaner production programs towards industries producing hazardous waste.

4.50 Conduct a comprehensive review of hazardous waste reduction and management in Western Australia to assess behavioural change programs, producer

and consumer responsibilities, quantities and sources of hazardous waste, current procedures for transport, storage and disposal of hazardous waste to ensure international best practice. Emphasis should be placed on rail transport of all hazardous wastes. Importing of hazardous wastes from interstate or overseas will be prohibited.

4.51   Require the Resource Recovery Precinct Team to nominate and establish 5 resource recovery precincts for the metropolitan region in conjunction with community organisations and the Waste Management Board.

> **OUR WATER FUTURE**

4.52   Complete the State Water Strategy after full public consultation including a major public Water Symposium to set out a cost effective supply strategy, a conservation strategy and a research strategy for the long-term.

4.53   Establish initiatives to achieve a 10% reduction in per capita water use by 2012.

4.54   Establish guidelines for household use of grey water.

4.55   Develop partnerships with local government to ensure water sensitive urban design is built into all urban development.

4.56   Ensure Regional Councils, co-ordinated by the Department of Environment Water and Catchment Protection, take more responsibility for managing groundwater, including bores, through the development of Regional Groundwater Management Plans.

4.57   Construct the Kwinana waste water reuse facility with industry partners moving towards achieving in 10 years 20% waste water reuse and set out a long term plan for how all waste water could be reused.

4.58   Examine the potential for individualised marketing of water conservation and water supply options including rainwater tanks, bore and grey water systems.

> **SUSTAINABLE ENERGY**

4.59   Develop further voluntary schemes with the housing industry to demonstrate at least 4 star energy rating on all new homes and move to a more mandatory scheme through a Guide to Sustainable, Planning, Building and Construction developed with local government and industry.

4.60   Develop a rating scheme for all home renovations that provides incentives for renovators who adopt certified energy efficient renovations.

4.61   Ensure Town Planning Schemes require solar orientation of new developments to achieve 80% oriented houses, and provides guidance on the re-orientation principles as

part of all renovation approvals (see *Building sustainably*)

4.62   Encourage building design and management for energy efficiency for all government buildings.

4.63   Provide Eco-Loans as part of the existing KeyStart program with a requirement to save energy through the design and construction of the home.

4.64   Demonstrate government leadership in sustainable energy through Sustainability Action Plans.

4.65   Continue trialling innovations in transport fuels including gas, hydrogen fuel cells and biodiesel demonstrations.

4.66   Develop a State BioEnergy Policy.

4.67   Develop new initiatives to manage peak load demand.

4.68   Provide mechanisms in the electricity market structure for encouraging renewable energy and distributed generation which could include incentives to reduce line losses and providing priority dispatch for renewable energy in any trading market.

4.69   In meeting the Mandatory Renewable Energy Target investigate the scope for mechanisms to ensure that Renewable Energy Certificates are sourced locally.

4.70   Continue to support the use of renewable energy in Remote Area Power Supply (RAPS) systems.

4.71   Seek to minimise energy use by:

- household energy conservation information programs
- school curricula and management to demonstrate energy efficiency
- supporting mandatory national standards for energy efficiency in appliances and vehicles
- ensuring government procurement is based on life-cycle costing to properly account for the cost of energy
- using sustainability assessment to include life-cycle analyses on all such decisions.

> **PRESERVING CULTURAL HERITAGE, LANDSCAPES AND CREATING 'SENSE OF PLACE'**

4.72   Support Regional Sustainability Strategies as opportunities to develop 'sense of place' stories. This will provide opportunities for communities to document their own stories of place within their communities and landscapes so that the stories are not lost but are enlivened, for example, Kojonup's 'Kodja Place'.

4.73   Encourage local government's implementation of heritage to be consistent, transparent and builds on precinct plans that establish guidelines for how to protect and enhance the essential

character of their area whilst allowing for sympathetic infill and redevelopment.

4.74 Provide opportunities for students to learn about their natural and cultural environments and their local histories.

4.75 Support opportunities for Indigenous people to promote cultural awareness within their own communities.

4.76 Develop a Built Environment Policy that focuses attention on Western Australia's architectural features that reflect our 'sense of place'.

4.77 Develop a Creative City Policy as part of *Future Perth* to ensure that community values are expressed creatively in the city centre and other centres.

> **BUILDING SUSTAINABLY**

4.78 Promote a voluntary 4 star energy rating on all new homes.

4.79 Produce a Sustainable Planning, Building and Construction Guide through the State-Local Government Sustainability Roundtable and in close consultation with industry stakeholders.

4.80 Progressively incorporate the principles of the Sustainable Planning, Building and Construction Guide into relevant state government documents such as a Statement of Planning Policy, the Building Codes, the Design Codes, R-codes and local town planning schemes.

4.81 Work to ensure all government housing and construction occurs within the Sustainable Planning, Building and Construction Guide.

4.82 Continue to provide incentives for sustainable building and construction including renovation.

Sustainability and community

> **COMMUNITY SERVICES AND DEVELOPMENT**

5.1 Develop a Policy on Regional Integrated Community Services based on Regional Councils creating Plans that:

- examine the various community needs of their region

- assess the relevance of various programs and services already available

- link up to other economic and environmental issues in their area

- suggest how and where services could be co-located to improve their integration and relevance.

5.2 Facilitate local community involvement in defining community service needs thereby creating engagement with local issues and the inspiration and energy to solve them.

5.3 Use the Consulting Citizens Resource Guide to promote effective public consultation and active citizenship.

5.4 Review crime prevention programs to ensure links between community development initiatives and sustainability as a way of focussing partnerships in areas of multiple social disadvantage, especially using 'sense of place' projects.

5.5 Use a whole of government response to enhance the capacity and resilience of people at critical life stages, especially carers and volunteers.

> **HOUSING AND SUSTAINABILITY**

5.6 Develop a Statement of Planning Policy on Public Housing, Community Housing and Affordable Private Housing with groups of local regional councils to ensure there is an appropriate distribution of all three housing tenures with guidelines and incentives, for example, density bonuses built into each local Town Planning Scheme.

5.7 Evaluate underutilised government owned land close to services, for example passenger train stations and institutional sites for potential to develop as mixed housing opportunities.

5.8 Develop a community housing framework involving standards and accreditation to ensure world best practice in the provision of this housing type.

5.9 Draw on research to demonstrate the business benefits of sustainable housing so as to help transform the house construction market to one receptive to sustainable development.

5.10 Utilise the housing research and training provided by the Australian Housing Urban and Research Institute to facilitate policy development in the provision and location of social housing in Western Australia.

> **SUSTAINING HEALTHY COMMUNITIES**

5.11 Support the existing role of the health sector in the control of environmental hazards and ecological health issues as well as community public health programs that deal with long term health issues.

5.12 Ensure health is part of the Regional Integrated Community Service Plans through the new Health Regions.

5.13 Continue to take account of cultural dimensions in health programs, particularly as they apply to remote Indigenous communities and in areas of multiple social disadvantage.

5.14 Provide effective links between the health sector and other agencies to create whole-of-government approaches to reduce lifestyle choices that cause disease and disability and new environmental hazards that affect health.

5.15 Develop and implement health impact assessments, as part of the sustainability assessment process.

5.16 Pursue the recommendations of the Report of the Health Administrative Review Committee which pertain to the development of long term planning directions and the focus of the Western Australian health system.

5.17 Initiate a program, involving key government agencies and local communities, to enhance the delivery of services to 0-8 year olds and their families and carers.

> **EDUCATION AND COMMUNITY AWARENESS FOR SUSTAINABILITY**

5.18 Develop a comprehensive communications strategy on sustainability in the implementation phase of the State Sustainability Strategy which includes all aspects of formal and informal education.

5.19 Further develop the draft Environment Education Strategy to support education for sustainability.

5.20 Involve District Offices of the Department of Education in the development of the Policy on Regional Integrated Community Services.

5.21 Assign a senior officer in the Department of Education with responsibility for formal environmental and sustainability education through the Curriculum Framework.

5.22 Continue to introduce sustainability into the curriculum.

5.23 Encourage the further use of schools as community hubs.

5.24 Move towards new schools being built according to sustainability principles including universal design and progressively convert existing schools.

5.25 Orient schools to an ecological ethic, for example through school bushland projects, growing native trees from seeds, composting, using water run off for gardens.

5.26 To encourage greater biodiversity conservation and water efficiency, amend the Department of Education's policy that pays for grounds maintenance on the basis of how much bush is cleared.

5.27 Develop and support partnerships on sustainability education with other sectors (such as local government and the WA Collaboration) to maximise the delivery of sustainability education.

5.28 Develop partnerships and provide ongoing support to community-based groups to assist in delivering school and community-based programs that engage children in activities that contribute to reducing car use for school trips, including the promotion of proficient bicycle use.

5.29 Provide travel choice, cycling and walking behaviour change programs including the annual *Bike to School Day* during Bikeweek and the annual *Walk to School Day* during the *Walk There Today* week of walking events and the Walking School Bus program.

> **SUSTAINABILITY THROUGH CULTURE AND THE ARTS**

5.30 Develop programs, partnerships and incentives that encourage research for example into cultural heritage, innovation, new products, entrepreneurship (new distribution channels) and business sponsorship through the arts around key sustainability issues.

5.31 Encourage flexible funding criteria that facilitate entrepreneurial endeavours in the arts and cultural activities that promote sustainability.

5.32 Ensure that sustainability is embedded in the goals of community arts and community cultural development processes.

5.33 Support Indigenous cultural issues in planning, especially for new developments so that regional Indigenous stories and perspectives can be built into the emerging story of the region.

5.34 Support cultural tourism endeavours that meet heritage, reconciliation, environmental and community access and development criteria.

5.35 Develop the BiosphereWest Plan for the provision of a Museum facility which utilises the building as a sustainability educational tool in itself.

5.36 Improve the opportunities for children and young people to experience art and cultural activity including through better coordination of school visits and partnerships with arts and cultural organisations.

5.37 Take advantage of the new ABC Production Facility to forge new partnerships and ensure local 'sense of place' film and drama are created in Western Australia.

> **MULTICULTURALISM AND SUSTAINABILITY**

5.38 As part of the consultation phase of developing the State Sustainability Strategy, a seminar will be held entitled *Many Cultures: One Earth* to seek perspective on all aspects of the Strategy. The seminar will include the various authors of the background papers on explaining the ethics of sustainability. The aim will be to establish the seminar as an annual event to review sustainability in the State from an ethical and cultural perspective.

5.39 Finalisation and implementation of the Anti-racism Strategy including implementation of a community consultation strategy to obtain community feedback on issues relating to multiculturalism and anti-racism as well as implementation of a community education strategy which encourages an understanding and appreciation of multiculturalism and which dispels stereotypes and prejudicial perceptions.

5.40 Continue to develop multicultural perspectives and link them to sustainability outcomes through:

- Expansion of the Minister for Multicultural Interests' Multicultural Awards

- Production with Channel 31 of television programs on multiculturalism and racism

- Cultural awareness training across the public sector

- Greater diversity towards appointments on Boards and Committees.

Sustainability and business

> **TRAINING AND FACILITATION FOR SUSTAINABILITY**

6.1 Work towards establishing a Centre of Applied Sustainability in TAFE to coordinate the new training agenda in sustainability.

6.2 Work towards expanding the Green Jobs work of the Department of Training to incorporate the various initiatives in the State Sustainability Strategy on new global employment opportunities in sustainability.

6.3 Build on the Department of Training's *Working Futures* conference to hold an annual 'vision' event that attempts to work through how Western Australia can position itself in global sustainability issues.

6.4 Review the process of enterprise facilitation within the state government to ensure that there is a core of sustainability principles and focus on economic opportunities in sustainability and ensure that there are developmental and community-based approaches to enterprise facilitation, especially in rural areas.

6.5 Provide leadership on certification and accreditation for professional activities.

> **FINANCIAL REFORM AND ECONOMIC INSTRUMENTS FOR SUSTAINABILITY**

6.6 Work in partnership with the financial sector in order to improve investment decisions for sustainability and encourage greater investment in sustainability business opportunities in Western Australia.

6.7 Examine the ways in which subsidies and other financial mechanisms are having positive or negative effects on the health of the environment, society and economy.

6.8 Establish a policy on the allocation of incentives and support measures to ensure that these are supporting sustainability.

6.9 Work progressively to introduce triple bottom line reporting to the state budget.

> **ECO-EFFICIENCY AND INDUSTRIAL ECOLOGY**

6.10 Encourage the adoption of the Western Australian Sustainable Industry Group's Cleaner Production Statement by all government agencies as part of their Sustainability Action Plans.

6.11 Work to extend the Kwinana Synergies Project to other industrial precincts in Western Australia.

6.12 Explore the development of an Eco-Industries Section within the Department of Environment, Water and Catchment Protection.

6.13 Expand the promotion and adoption of the successful Industrial Waste Exchange program, and investigate its use as part of the environmental assessment and licensing system.

6.14 Encourage the establishment of sustainable business clusters in Western Australia, primarily based around resource recovery precincts and industrial parks.

6.15 Provide a central information hub with information on sustainable technologies and business solutions on the Sustainability Online website, in conjunction with the Western Australian Sustainable Industry Group, Centre of Excellence in Cleaner Production at Curtin University and Environmental Technology Centre at Murdoch University.

6.16 Ensure that Western Australia implements and actively participates in national eco-labelling programs, such as the standards established by the Australian Environmental Labelling Association.

> **INDUSTRY SUSTAINABILITY COVENANTS**

6.17 Develop a sustainability covenants program. Sustainability covenants will:

- be non-binding documents entered into between government and progressive companies or industry associations

- be developed in partnership with local communities and relevant public interest organisations

- cover all aspects of a company or industry's economic, social and environmental performance and will commit the company or industry sector to creating net benefits in each of these areas.