Department of the Premier and Cabinet
Government of Western Australia

SUBMISSION NO. 22

Our ref: PJ/SD

Mr B Billson
Committee Chair
House of Representatives Standing Committee
On Environment and Heritage
Parliament House
CANBERRA ACT
2600

Dear Mr Billson

Inquiry into Employment in the Environment Sector

I refer to your letter addressed to The Hon Dr Geoffrey Gallop MLA dated 27 June 2002 concerning the above.

I have attached two submissions which are detailed below, for your Inquiry:

Letter dated 22nd August 2002	From Dr Judy Edwards MLA, Minister for the Environment and Heritage
Comments	Submitted by The Department of Agriculture, Government of Western Australia

Yours sincerely

Petrice Judge
DIRECTOR
OFFICE OF FEDERAL AFFAIRS
30 AUG 2002

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Department of the Premier and Cabinet
Government of Western Australia

Our ref: PJ/SD

Mr B Billson
Committee Chair
House of Representatives Standing Committee
On Environment and Heritage
Parliament House
CANBERRA ACT
2600

Dear Mr Billson

Inquiry into Employment in the Environment Sector

I refer to my previous letter of 30th August 2002 in which I forwarded two submissions to the above Inquiry. I have attached a further submission from the Department of Industry and Technology, Government of Western Australia.

Yours sincerely

Petrice Judge

Petrice Judge
DIRECTOR
OFFICE OF FEDERAL AFFAIRS

4 SEP 2002

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Department of the Premier and Cabinet
Government of Western Australia

Our ref: PJ/SD

Mr B Billson
Committee Chair
House of Representatives Standing Committee
On Environment and Heritage
Parliament House
CANBERRA ACT
2600

Dear Mr Billson

Inquiry into Employment in the Environment Sector

I refer to my previous correspondence of 30 August 2002 and 4 September 2002 and I am pleased to provide you with further submissions from:

- the Minister for Consumer and Employment Protection, Minister for Training and Leader of the House in the Legislative Assembly;
- the Department of Mineral and Petroleum Resources.

Yours sincerely

Petrice Judge
DIRECTOR
OFFICE OF FEDERAL AFFAIRS

12 September 2002

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P Judge FA

MINISTER FOR THE ENVIRONMENT AND HERITAGE

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PREMIERS

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27 AUG 2002
Corporate Information
Premier & Cabinet

Your ref: 200210073
Our ref: 13098

Lyn Genoni
A/Director Federal, Constitutional and Territories Affairs
Department of the Premier and Cabinet
197 St George's Terrace
PERTH WA 6000

Dear Ms Genoni

HOUSE OF REPRESENTATIVES – INQUIRY INTO EMPLOYMENT IN THE ENVIRONMENT SECTOR

Further to your request of 22 July 2002, some comments on the contribution of the Department of Conservation and Land Management (the Department) to employment in the environment sector are provided below.

The Department has the lead responsibility for conserving the rich diversity of native plants, animals, natural ecosystems and many unique landscapes in the State of Western Australia. The Department manages approximately 24.2 million hectares, including approximately 9 percent of Western Australia's land area, in national parks, marine parks, conservation parks, regional parks, State forests and timber reserves, nature reserves, and marine nature reserves. The Department has three major outputs to enable these environmental management objectives to be achieved: Nature Conservation, Parks and Visitor Services and Sustainable Forest Management.

In order to meet these obligations, as at August 2002, the Department was directly employing 1,340 people throughout the State across all modes of appointment (permanent, casual, seasonal, wages and salaried), and in a wide variety of occupational groupings.

The Parks and Visitors Services Output also generates significant private sector employment opportunities due to nature based tourism. Nature based tourism opportunities have developed as a consequence of the management plans, access and infrastructure provided by the Department in respect of the lands and waters within its jurisdiction. Much of this employment has been in regional and remote areas of the State and in many instances has also resulted in improved opportunities for indigenous people.

The Department does not maintain figures on non-Government employment in the Environment Sector.

Yours sincerely

Judy Edwards

Dr Judy Edwards MLA
MINISTER FOR THE ENVIRONMENT AND HERITAGE

22 AUG 2002

29th FLOOR, ALLENDALE SQUARE, 77 ST. GEORGE'S TERRACE, PERTH 6000 TELEPHONE: (08) 9220 5050 FACSIMILE: (08) 9221 4665/8
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COMMENTS SUBMITTED BY THE DEPARTMENT OF AGRICULTURE

HOUSE OF REPRESENTATIVES – INQUIRY INTO EMPLOYMENT IN THE ENVIRONMENTAL SECTOR

The Australian Landcare Council, in it's paper "Enhancing community participation in Natural Resource Management – Recommendations to Commonwealth Ministers" (released in May 2002) considers that enhanced community participation is essential for Australia to begin to adequately address its environmental problems. To achieve this, the report outlines 6 critical success factors to encourage expanded community involvement.

1. Establish new measures and processes to ensure genuine community involvement in the design and evaluation of natural resource management policy and programs.
2. Create a broader suite of government incentives to motivate greater long-term involvement and investment by rural and urban landholders, managers and users in sustainable land-use practices.
3. Support State arrangements that ensure regional structures include effective community representation and robust natural resource management targets and accountabilities.
4. Build capacity that is responsive to social, economic and geographic circumstances, and to regional natural resource management priorities.
5. Commit to ongoing natural resource management research and development that is integrated and readily applied.
6. Monitor and evaluate all natural resource management programs.

One critical success factor (2) considers the use of high profile market-based mechanisms such as credits, changes to the taxation system and environmental management systems. Another critical success factor (4) recognises that building capacity is essential for enhanced community participation, and that this should include long-term regional funding of co-ordination, facilitation and State extension staff essential to assist community groups to build capacity and undertake strategic natural resource management activities.

A large proportion of funding for employment in the environment sector in WA comes from the Natural Heritage Trust, a $1.5 billion commitment from the Commonwealth Government since 1997. Projects funded by the Natural Heritage Trust, including those that fund staff, has to be matched (in either dollars or in-kind support) by local government, community groups or state agencies.

During the last year of Natural Heritage Trust funding (2001/02) WA was estimated to receive over $8.7 million to support up to 125 positions across the State (including community coordinators, state coordinators and those staff who are housed within agencies providing technical expertise). It is important to keep in mind that these funds were more than matched by community, local government and state agency input.

This is a significant investment on the part of all involved.

In 2000, the peak landcare organisation in WA, the Soil and Land Conservation Council (SLCC) commissioned a report into the support given the people funded through the Natural Heritage Trust, (considered as Community Support Officers or CSOs in the report) and what future resourcing and roles may be needed.

The report identified six recommendations:

1. *Maintain the partnership structure* in terms of all tiers of government, as the CSOs were recognised as key links in terms of their technical expertise, facilitation support and commitment, assisting in the realisation of State and Commonwealth policies and regional initiatives.
2. *Develop an in-principle statement recognising the role of CSOs in natural resource management* to assist in funding negotiations, partnership agreements and roles and responsibilities. This in-principle statement has been developed by the Senior Officer Group (comprising Executive Directors of the NRM agencies in WA), which SLCC has since endorsed.
3. *Develop the regional model as the core employment model, which* is being progressed through the NRM regional groups.
4. *Identify the benefits of CSOs to landscape and NRM activities*
5. *Improve the focus on outcomes,* with both recommendations 4 and 5 being considered by the Association of Community Landcare Professionals (ACLP), a volunteer support group for CSOs and both SLCC and the NRM Regional Chairs developing measures of effectiveness and efficiency for these positions.
6. Ens*ure the adaptive capacity of CSO models is not lost*, recognising the community support and basis for many of these positions.

Communities have recognised the value and importance of these community support officers and a culture of expectation has been built up over the past decade that continued funding will be provided for these positions. There needs to be a process of rationalisation in terms of the number of these positions, their roles and the skills required, but the 'community landcare professional' has become an integral component of community involvement in environmental issues.

However, there are issues that need resolution.

- Continued employment of this sector of environmental services is currently dependent on primarily Commonwealth funding programs of finite life. Strategies need to be implemented that build on the capacity created and encourage greater self funding or more diverse funding of such positions. For example, provision of skills and other support to enable CSOs to better meet the needs of clients and develop as fee-for-service consultants.

- The community support officers who are managed within the community, often based in Shire offices, operate under a different management structure to those officers who are housed within an agency. Those managed within the community often have management committees who have little or no experience in managing professional staff. Some regional NRM groups support training for these management committees and funds are provided for this from state agencies but this needs to be expanded across the State.

- These positions have traditionally been funded for up to 3 years, and when dealing with long term environmental problems both in their expression and amelioration, this creates problems for the communities within which these staff work.

- Adequate training needs to be provided to these community support officers to ensure they are ready to undertake a more strategic role in their work with communities. This training should encompass both technical and community engagement areas, and its importance should be impressed upon the management committee to ensure the employee is given the opportunity to participate.

P Judge
FA.

GOVERNMENT OF WESTERN AUSTRALIA

OFFICE OF THE
MINISTER FOR STATE DEVELOPMENT;
TOURISM; SMALL BUSINESS

200213132
PREMIERS

Your Ref : 2002 10073
Our Ref : Min13880/DoIT134856

RECEIVED
30 AUG 2002
Corporate Information
Premier & Cabinet

Ms Ruth Young
Principal Policy Officer
Federal, Constitutional and Territories Affairs
DEPARTMENT OF THE PREMIER AND CABINET

HOUSE OF REPRESENTATIVES – INQUIRY INTO EMPLOYMENT IN THE ENVIRONMENT SECTOR

The Department of Industry and Technology has provided the following comments relating to the terms of reference for the above inquiry for inclusion in the coordinated Western Australian submission.

The current contribution of environmental goods and services to employment in Australia.

The Department notes the environment industry has grown to become a significant industry sector in Australia and is now a strong performer economically as well as performing its role in protecting the natural environment and facilitating sustainable development. However, the growth of the industry has not been accompanied by formal industry classification and measurement actions.

A major challenge facing governments and industry is to effectively define and scope the wide range of activities, products and services that comprise the 'Environment Industry'. This is because comprehensive and comparable data on the economic structure, activities and development of this 'industry' is currently lacking on a national basis.

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The reasons for the need for this data include:

- to gain an understanding of the structure, characteristics and particular strengths of the industry;
- to assess changes in industry capability over time;
- to assist with the development of policies to encourage and support growth, job creation and international trade in the environment industry;
- to provide a benchmark against which the effectiveness of government policies aimed at supporting the industry's growth and development may be measured over time;
- to assess the contribution of the industry to national and state economic, social and environmental performance, and to ecologically sustainable development;
- to enable comparison of the industry with other industry sectors, between states and other countries; and
- to assist with promoting Australian industry's expertise in international markets and with gaining greater access to those markets.

The Department of Industry and Technology is aware of recent moves by the Commonwealth through the Department of Environment and Heritage, in consultation with State and Territory Government agencies, to progress this issue.

The implementation of the Commonwealth's Action Agendas for the Environment and Renewable Energy sectors, plus complementary State and Territory initiatives, places a greater urgency on the need for environment industry data.

This matter is in the national interest and should be funded by the Commonwealth Government and implemented in consultation with State and Territory Governments.

The future potential growth, including barriers and opportunities for growth, of environmental goods and services and impact on employment.

The Department of Industry and Technology believes that there is considerable potential for the growth of environmental management goods and services from domestic and export sectors.

Domestic markets will increase in size and scale due to the following drivers:

- an increasing take-up of eco-efficiency processes within existing industries with productivity, competitiveness and cost efficiency being the incentive;
- greenhouse issues will drive companies, particularly the larger greenhouse gas emitters, to seek new technologies and services to limit emissions and this will assist the growth of many Small to Medium Enterprises (SMEs) working in environmental management;

- sustainability issues are now acting as a driver to generate employment in environmental services, as an increasing number of companies conduct environmental audits and produce public statements on environmental management. While companies engaging in public environmental reporting so far have been larger companies, particularly those associated with minerals and energy, the use of such reports now appears to be spreading to smaller companies operating in a broadening range of industry sectors;
- the demand for renewable energy, partly driven by greenhouse issues and partly by Governments mandating that a proportion of energy generation must be from renewable sources; and
- environmental repair – such as combating salinity – will be a major consideration, particularly in Western Australia.

Export markets will increase in size and scale due to the following drivers:

- an increasing demand for environmental goods and services, particularly in the Asian region, due to rapidly rising industrial production and urbanisation, both of which are generating rising pollution levels and the demand for improved health and environment standards;
- increasing opportunities to win international aid contracts, which are expected to generate opportunities in the provision and treatment of water, sewerage and alternative energy systems; and
- an increasing demand for goods and services associated with greenhouse gas emissions, including measuring and monitoring equipment, equipment to reduce pollution and consultancy services for environmental management programs, including audits and reporting systems.

However, there are a number of constraints to growth that may provide a focus for removing impediments to industry development.

- The environment industry has expressed concerns that Australia's reluctance to ratify the Kyoto Protocol may disadvantage Australian companies in participating in Clean Development Mechanism, Joint Implementation and Emissions Trading if and when the Protocol comes into effect. While estimates of the potential loss of opportunity are not available, they may be considerable within the context of the size of the industry. Should the Protocol come into effect without Australia's participation, a lot of 'first mover' advantages through 'learning by doing' may be lost to Australian environment companies.
- The small size and scale of many Australian companies is an impediment to establishing export focused operations, particularly for those companies that are inexperienced in overseas markets and which may have limited cash flows to sustain the costs of establishing overseas ventures. One of the solutions to this dilemma may be initiatives to promote networking among Australian companies eg assisting SME's that provide goods and services to 'piggy back' on major contracts won by Australian multinational companies or the development of consortia of SMEs to cooperatively bid for major projects.

- Obtaining information on overseas export opportunities may be subject to market failure through 'information asymmetry' – where information exists but accessing that information is prohibitively expensive for SME's. Again, one solution to this impediment may be the development of coordinated marketing information on business opportunities that can be shared by Australian companies.

Current status and future requirements for an appropriately skilled workforce.

Western Australia has a strong educational infrastructure in environmental sciences and environmental engineering that provides a strong professional grounding for higher-level employment opportunities.

The future potential growth previously identified provides an indicator to the expanding range of education and training required at all levels to ensure that domestic and export business opportunities are met.

Implications for education and training with associated traineeships and apprenticeships will arise from growing employment in:

- renewable energy supply and energy efficiency;
- more efficient and intensive agriculture;
- alternative transport techniques;
- land repair and preserving the integrity of land and water resources;
- recycling and re-use of materials as a consequence of the rise in material consumption;
- preservation of biodiversity and natural resources; and
- emission control and cleaner production technologies.

Continued coordination and cooperation between industry, industry associations, government, unions, education and training bodies and institutions will be required to achieve a focussed and timely response to skills generation in the environment sector.

Appropriate policy measures that could encourage the further development of the environmental goods and services sector.

The Department of Industry and Technology supports the Commonwealth Government's Environment Industry Action Agenda and Renewable Energy Action Agenda. Regular liaison between State and Commonwealth Governments and industry should form the basis for the continued and further development of these agendas.

In addition, most State Government agencies have industry development policies and programs that seek to promote the environmental management sector. The Department of Industry and Technology has an active program of activities, including initiatives to promote sustainable development, renewable energy, environmental management, building and construction and the South West timber industry.

Important policy-based areas of focus for the development of the environment goods and services sector include:

- coordinated R&D into areas of environment goods and services in which Australia has, or could develop, an internationally competitive advantage. There are a number of Cooperative Research Centres and Centres of Excellence in Australia. Funding for these centres and an assessment of their ability to successfully network with industry is a priority for promoting the sector;
- investment attraction strategies, cooperatively developed between State and Commonwealth Governments and industry, are important in developing a coordinated and targeted approach to increasing investment in Australia;
- trade development strategies, cooperatively developed between State and Commonwealth Governments and industry, are an area where greater leverage could be developed to increase exports of goods and services; and
- the development of international aid markets for contracts associated with international aid organisations are important. Improving linkages between AusAID, other relevant national organisations and industry groups would assist this process.

Information and reporting systems that would support the uptake of environmental goods and services to enhance overall business performance and development of the sector.

Information and reporting that promotes the environmental goods and services sector is important in four areas:

- improved data collection by the ABS (production, employment, use of services and exports of goods and services), Department of Foreign Affairs and Trade (exports of services) and Environment Australia (industry trends and activities) would assist in building a picture of the importance of the sector and the positive role it plays in Australia's economic development;
- promoting public environmental reporting is important, but the Government needs to encourage rather than prescribe public reporting. The Government's role in this process could include providing financial assistance through industry support schemes to encourage companies to adopt public environmental reporting and provision of 'how-to' information promoting best practice examples of public reporting;

- leading by example, with the Commonwealth Government either encouraging or requiring national agencies to adopt public environmental reporting. State Governments may also consider this initiative; and
- encouraging companies to demonstrate compliance with ISO 14000, which may be of increasing importance in winning international projects.

Information and reporting could comprise many indicators. While there may be a national consensus that some reporting should be mandatory – such as greenhouse emissions by large emitters – there is less of a consensus as to how much environmental reporting should be mandatory rather than voluntary, or indeed what indicators are both practical and useful.

Over time, and as environmental reporting becomes standard practice, it is likely that reporting on a broadening range of indicators will be mandated by Government. This raises issues of compliance costs, penalties for non-compliance and the destination and use of the data collected.

Neil Roberts
CHIEF OF STAFF

29 AUG 2002

HOUSE OF REPRESENTATIVES
STANDING COMMITTEE ON ENVIRONMENTAL HERITAGE

INQUIRY INTO EMPLOYMENT IN THE ENVIRONMENTAL SECTOR

The Department of Training has provided the following information for consideration by the Department of the Premier and Cabinet in the development of a State Government submission to the above Inquiry. While the main focus of this paper relates to environment industry related vocational education and training (VET) and employment services, mention has also been made of other Western Australian Government initiatives.

1. **The current contribution of environmental goods and services to employment in Australia.**

A report prepared by the Environmental Management Industry Association of Australia[1] estimates that the environment industry accounts for 127,000 jobs in Australia.

A definitive estimate concerning the contribution of environmental goods/services to employment is not available for Western Australia. The inherent difficulty in calculating employment estimates for these sectors is well documented and encompasses definitional issues, inconsistencies in data collection methods and the complexity in assessing partial or indirect environmental components across the full gambit of industries and occupations.

At present the Australian Bureau of Statistics (ABS) industry and occupational data classifications, namely (1) the Australian and New Zealand Standard Industrial Classification and (2) the Australian Standard Classification of Occupations, do not enable precise identification of the sectors/occupations that provide environmental goods/services.

The ABS has advised that the development of an Australian Environment Activity Classification (AEAC) is under way. It is envisaged that this classification will result in the availability of quality, detailed data on quantitative indicators pertaining to the environmental industry. AEAC describes and classifies activities undertaken by organisations that are nominated to be within the environment industry. According to the ABS, the classification is in a draft phase, with a pilot test to be conducted when funding is available. The AEAC is based on many of the principles adopted by the Organisation for Economic Co-operation and Development (OECD) in its definition and classification of the environment industry, however the ABS has adapted this for Australian conditions.

2. **The future potential growth, including barriers and opportunities for growth, of environmental goods and services and impact on employment.**

In a media statement released by the Premier of Western Australia (5 January 2002) it was estimated that there is the potential to create between 6,000 to 23,000 jobs in the Western Australian environmental industry.

Research commissioned by the Department of Training, *Enviroworks: Working for the Planet* (2000)[2] highlights the potential for employment growth across six key environmental sectors: (1) earth repair; (2) environmental survey; (3) resource renewal; (4) sustainable energy; (5) sustainable communities/cities; and (6) clean, green food and sustainable agriculture. The matrix presented in Attachment 1 provides a brief description of each sector and summarises the impact on employment from a skills perspective, as well as opportunities and barriers to employment growth.

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[1] *The Australian Environment Industry – A Framework for Domestic and Export Market Development and a Feasibility Study for an Australia Inc Showcase* (2000) prepared for Environment Australia and the Department of Industry, Science and Resources.

[2] Prepared by Dr David Annandale, Institute for Environmental Science, Murdoch University

For more detailed information, the *EnviroWorks* report is presented in full on the Department of Training's website at http://www.training.wa.gov.au/access/content/enviroworks-report.pdf

The Department of Training is currently undertaking a Green Jobs Survey[3] to assess current and future sectors job growth, and emerging areas of skills demand, employment growth and training opportunities. The results of this research are expected to be available in September 2002.

The OECD is also undertaking research to update information on employment in environmental related sectors in member countries. The research will examine the impact on employment of environmental policies and local sustainable development initiatives, and assess the potential impact of climate change policies on employment.

3. Current status and future requirements for an appropriately skilled workforce.

Current Status

The Western Australian Government has initiated a range of initiatives that aim to (1) build the State's expertise in environmental management and technology and (2) create new jobs and skill development opportunities that support the environment. These include:

- The allocation of $600,000 over three years to the Environmental Technology Centre (ETC) located at Murdoch University. Of note, the United Nations Environment Program for the Asia Pacific region has formed a partnership with the ETC and is expected to invest $1.2 million to establish a presence in Western Australia.

- The establishment of a Centre of Excellence in Natural Resource Management in Albany.

- The establishment of a Sustainability Unit within the Department of Premier and Cabinet and the current development of a *Sustainability Strategy*, to be released later in 2002.

- An allocated $5 million over four years for the implementation of sustainable energy programs.

- A contribution of $10 million over six years to the Strategic Research Fund for the Marine Environment as a joint venture with the Commonwealth Scientific and Industrial Research Organisation (CSIRO).

- An allocation of $5.5 million to the Farmland Reforestation Program which aims to underpin growth in the State's plantation timber industry, stimulate employment in regional areas, combat salinity and soil erosion, and improve water quality.

- The publicly funded VET sector offers a range of environmental, landcare, land management, conservation and regeneration programs. During 2002 - 2004, the Department of Training has allocated $9.3 million for training programs relevant to environmental industries, creating more than 1,400 training places each year.

- The Department of Training's *Science and Technology Innovation Fund* provides $1 million annually in grants for joint VET sector and industry projects to enhance the national and international competitiveness of the State's VET sector by training Western Australians in cutting-edge technologies. Projects funded to date encompass a diverse

[3] The Department of Training has adopted the broad definition of a green job as being one 'which reduces the negative impact on the environment'.

range of areas, including the development of environmentally sustainable industries, for example:

- Sandalwood Industry Project to develop a viable timber plantation species, with an emphasis on species that are endemic to the Great Southern Region, which can be used in marginal rainfall regions.

- Kimberley Native Plant Project to investigate native species with commercial potential as well as a landcare benefit.

- The Department of Training has allocated $5 million for a new Centre of Excellence in Environmental Science and Rural Studies at the Challenger TAFE Murdoch campus.

- The Department of Training's Landcare Training Initiative provided approximately $4 million over past four years, creating 400 traineeships in the landcare industry throughout Western Australia. Under this initiative, the Department also funds three Landcare Enterprise Officers to facilitate Natural Resource Management (NRM) employment and training opportunities in regional Western Australia and a range of projects across the state that focus on employment development in the NRM area.

- The Department of Training's *EnviroWorks* initiative provides assistance with employment and enterprise development opportunities in environmental industries. *EnviroWorks* includes a website providing comprehensive information on the potential for 'green jobs' in Western Australia.

- The Department of Training's Enterprising Options initiative supports a broad range of projects. The projects include assessing the feasibility of endemic plant species to be used for both a landcare and commercial benefit on the south coast and the development of sustainable industries to service walkers on the internationally acclaimed walk trail the 'Bibbulmun Track'.

- The Conservation and Land Management Training Package qualification was nationally endorsed in April 2002 and will be progressively implemented in Western Australia. There are also a number of Training Packages with components that deal specifically with environment related competencies, including Agriculture, Horticulture, Tourism, Mining and Water.

Future requirements for an appropriately skilled workforce

The Department of Training is responsible for managing the State Government's $240 million investment in VET and approximate $15 million investment in employment programs/services. In determining priorities for VET and employment programs, the Department of Training utilises a range of mechanisms to monitor emerging workforce requirements. This encompasses extensive industry, regional and community networks as the basis for consultation (including the funding of Industry Training Advisory Bodies and Regional Employment Coordinators), in conjunction with comprehensive research and analysis of economic, labour market, demographic and social trends/developments/forecasts and the commissioning of targeted industry studies.

The outcomes of this process are articulated in the *State Training Profile* which identifies VET priorities over the next three years. The Profile is updated annually, enabling the VET system to respond promptly to changing or emerging skill requirements. The *State Training Profile* forms part of the Department's broader *State Training Strategy* that describes medium to longer-term directions for the VET system.

The Department of Training also examines emerging industries and future areas of employment growth. The environment sector has been identified within this context, with

significant business and employment opportunities expected across a range of related areas including:

- environmental consulting, management and monitoring;
- public health and education;
- biotechnology (including conservation biology, toxic waste treatment and renewable energy);
- pharmaceuticals;
- bioprospecting;
- services to agriculture;
- fisheries conservation and management;
- water supply, sewerage and drainage services (check);
- business and technical services;
- ecotourism;
- desalination; and
- renewable energy.

Priorities that have been identified for the Department of Training include:

- sustainable timber plantation harvesting;

- eco-tourism opportunities in the northern regions of Western Australia are expected to impact on the longer term training/skills needs of the industry, particularly for tour guiding;

- soil salinity and nutrient run-off remains a critical issue – skill/training implications include a need to provide farmers with relevant information and preventative measures. The State Government is committed to an approach to salinity that values agricultural productivity, conserves biodiversity, protects the built environment and recognises the related social dimensions; and

- land/environmental management practices to ensure the viability and sustainability of the pastoral, irrigated agriculture and horticulture industries.

The Australian National Training Authority Strategy 2004-2008 is currently under development. Although national consultation is ongoing, the strategy is expected to reflect the increasing importance of Australia's environmental welfare. Consistent with sustainability objectives, the strategy will translate into specific national programs and actions within the training framework.

4. Appropriate policy measures that could encourage the further development of the environmental goods and services sector.

Environmental policies can serve to stimulate employment growth in new occupations. To date, the regulatory push of Governments have been the traditional driving force behind the environmental industry. Research undertaken by the OECD[4] identified the following factors affecting demand for environmental goods and services:

- regulation coupled with a move toward incentives and economic instruments;
- public expenditure;
- technological development; and
- social pressures and changes in life styles.

[4] OECD, (1996) *The Global Environmental Goods and Services,* OECD Publications Service, Paris, France.

The earlier discussed research commissioned by the Department of Training (refer to section 2) is consistent with these findings.

In addition to the extensive range of environmental employment/skilling initiatives currently being implemented by the State Government (refer to section 3), future measures and strategies that could be considered include:

- Tax incentives, investment assistance and training incentives/support to pursue business development opportunities in the provision of environment related goods/services.
- Community/public education programs highlighting opportunities for the development of environment related goods and services.
- Industry/public education programs that demonstrate how sustainable development objectives can be value-adding opportunities rather than industry cost components.
- Improving market signals to which consumers, investors and industry respond, by setting the prices of environmental resources to reflect their true value to the community.
- Continued investment in relevant training and employment programs.
- Collaborative initiatives with all levels of government to promote the growth of business and employment in environmental industries.

5. Information and reporting systems that would support the uptake of environmental goods and services to enhance overall business performance and development of the sector.

A lack of understanding of the environment industry is in itself a major impediment limiting the growth of the industry. Accurate, reliable quantitative economic and labour market data pertaining to the environmental sector would provide a useful basis for evaluating its growth and expansion. The ABS' development of the Australian Environment Activity Classification (AEAC) should greatly assist in this regard.

The Western Australian Government's commitments include the introduction of annual environmental reporting requirements for all government agencies in areas such as energy consumption, waste disposal, vehicle fuel efficiency and recycling. Such reporting arrangements could have wider application across all levels of Government.

ATTACHMENT 1

ENVIRONMENTAL GOODS/SERVICES
POTENTIAL GROWTH SECTORS, IMPACT ON EMPLOYMENT AND OPPORTUNTIES/BARRIERS

Environmental Sector	Impact on Employment	Opportunities	Barriers
Earth repair Involves remediation and restoration of damaged or contaminated areas, sites and ecosystems.	Significant proportion of work generated from the mining industry. Draws from a range of scientific disciplines such as agriculture engineering, architecture, surveying, biochemistry.	• Continued rehabilitation of mine sites, industrial sites and farmland. • Direct seeding of damaged/degraded land. • Alternative use of saline affected areas as inland fish farms. • Development of relevant education and training programs for the domestic market. • Export of land rehabilitation expertise and education/training.	• Mining rehabilitation work often declines in times of economic downturn • Community perception that rehabilitation work should be on a volunteer basis • Lack of tax incentives and investment assistance to pursue issues such as salinity and erosion.
Environmental survey Relates to the assessment, monitoring and auditing of ecosystems, involving activities such as remote sensing, mapping, monitoring and sample analysis of air, water and land.	Requires skills such as (1) scientific data collection fieldwork, GPS and surveying, technical skills in electromagnetics, computer literacy (2) computer literacy, electronics skills, image processing (3) GIS/LIS computing, information/communications technology.	• The mining industry is a significant user of environmental survey services. WA has acquired considerable relevant expertise (including interpretation of remote sensing data) that can be extended to other areas of environmental management. • Demand for these services is increasing.	• Perception that environmental monitoring is a 'luxury' rather than a business necessity.
Resource renewal Includes waste management, clean production, recycling/reuse of materials.	Business opportunities and demand for expertise in areas such as environmental design, recycling, material substitution/dematerialisation and waste management. Range of skill	• Environmental regulations and reporting requirements likely to increase demand for associated consultancies and expertise. • Diverse and growing recycling sector. • Expansion of relevant tertiary programs and VET training/research. • Export of technology, expertise and training.	• Poor economies of scale with recycling/reuse businesses due to vast distances and small population. • Raw materials often less expensive than recycled materials. • Weak recycling culture and markets.

ENVIRONMENTAL GOODS/SERVICES
POTENTIAL GROWTH SECTORS, IMPACT ON EMPLOYMENT AND OPPORTUNTIES/BARRIERS

Environmental Sector	Impact on Employment	Opportunities	Barriers
Sustainable energy Encompasses research, development and marketing of renewable energy resources such as solar, wind and biomass, as well as conservation initiatives.	Business and employment opportunities associated with the development of alternative energy sources (eg wind, solar thermal systems, tidal/wave, hydropower, waste), energy efficiency design/technology and manufacturing of energy efficient products.	• Manufacturing of renewable energy and energy efficiency technologies. • Research and development. • Education and training in renewable energy and energy efficient practices. • Energy auditing, management and consulting.	• Relatively competitive energy costs for commercial users have resulted in deficient incentives for business users to consider active or passive renewable energy measures. • Existing renewable energy companies are small and often lack marketing and managerial skills. • Perception that renewable energy technology is unreliable.
Sustainable communities/cities Relates to innovations in transport, the planning of cities/communities and design of buildings.	Employment creation is achievable through the introduction of regulatory measures, public spending on environmental projects, green tax reform and research and development.	• Transport infrastructure and technology. • Passive solar building design and construction. • Regulatory support for public transport. • Urban infill development opportunities and corresponding increasing demand for high-density housing.	• Cities are built around needs of the car rather than the people. • A small population base on which to experiment with new urban design.
'Clean green food' and sustainable agriculture Relates to the production and processing of food which is free of toxic substances, pesticides and radioactive materials. 'Green food' refers to that which is produced through ecologically sustainable methods.	The international market for clean/green food and sustainably produced agricultural products has grown rapidly in recent years and this trend is expected to continue. There is evidence that organic farming is more labour intensive than conventional farming.	• International markets for organic and biodynamic food items. • Traditional Australian food (Kangaroo and native plant products). • Establishment of an industry body for marketing, certification and regulatory purposes. • Capitalise on Western Australia's abundance of land, established agricultural infrastructure and reputation as a 'clean' country.	• Industry fragmentation- lack of united industry body/voice and too many certifying organisations. • Product concerns in domestic market include unreliable supply, higher prices and perceived lower quality. • Salinisation in the South West. • Farmers perceive changeover from current farming methods as being risky. • Produce contamination due to lack of controls.

INQUIRY INTO EMPLOYMENT IN THE ENVIRONMENT SECTOR

The current contribution of environmental goods and services to employment in Australia.

Development and management of exploration, mining, petroleum production and value adding projects requires formal government approval including environmental clearance, works approvals and reporting under the Environmental Protection Act and other legislation. Gaining such approvals and the maintaining compliance with the conditions of approval requires a skilled environmental workforce. This environmental workforce includes employees in government agencies, the mining and petroleum companies and consulting firms.

The Department of Mineral and Petroleum Resources (MPR) employs about 25 environmental professionals in range of roles from environmental auditing to policy development.

The future potential growth, including barriers and opportunities for growth, of environmental goods and services and impact on employment.

It is expected that the resources development sector in Western Australia will continue to grow but this growth will fluctuate with global demand for mineral and petroleum products. Also, it is expected that the growth in downstream processing and value-adding activities will provide additional opportunities for employment of environmental goods and services personnel.

In addition, these new projects and existing projects are continually faced with changes in environmental legislation and regulations. In response, businesses and law practises are expanding their involvement in environmental legal matters and consequently, growth is expected in the provision of these environmental services.

Current status and future requirements for an appropriately skilled workforce.

Currently, the majority of environmental goods and services personnel employed by government, industry and consultancies in the resources sector work in the approvals process and ongoing environmental management to meet specific conditions of environmental approval during construction, operation and closure stages.

This focus is likely to broaden in response to a series of emerging environmental issues such as sustainability and climate change, a current example of this is the WA Government's State Sustainability Strategy. The Strategy will include directions on sustainability for the resources development sector. Implementing the Strategy measures as well as adopting international resources sector guidelines (eg the Global Mining Initiative), could be expected to result in additional specialised environmental skills being required throughout Government and industry decision making processes. That is, a stronger focus will be required on addressing environmental issues in respect of economic and social benefits of projects as part of the triple bottom line approach in sustainability programs.

In addition to government policy initiatives, industry has also taken action on environmental issues with many leading companies now abiding by internal environmental guidelines and policies.

Although growth in the resources development sector is expected, MPR is concerned that only a small number of the students graduating from Western Australia's tertiary institutions in environmental and natural resource management disciplines find employment in the environmental goods and services sector. This may simply be a result of "more graduates than jobs". MPR is uncertain about how to resolve this problem especially given the volatility of national and global markets and the flow on effects for Western Australia's mining and petroleum sectors. This volatility in employment security can lead to a reduced pool of skilled workers.

Appropriate policy measures that could encourage the further development of the environmental goods and services sector.

There appears to be a trend towards Government devolving regulatory functions to industry through self regulation. That is, Government is empowering industry with responsibilities to measure, audit and report on how environmental conditions prescribed, for example, under works licences are met. This devolution trend is in response to companies becoming ISO14000 accredited and thus being formally recognised as having responsible practices in place to ensure appropriate environmental management of projects.

Although this empowerment may not result in an increase the number of people employed in tasks such as monitoring, it does indicate a possible shift in the measuring and auditing tasks away from government to industry. However, Government will remain responsible for setting standards to ensure the community's environmental expectations are met. Managing practices to comply with meeting these standards will increasingly become the responsibility of industry.

Government can stimulate employment in environmental fields by responding to the need for improved understanding of Australian ecosystems. Research and support by government could assist in the establishment of baseline environmental studies, which are vital to allow sound environmental management and policy development. Research and development support by government could also target upcoming environmental issues such as greenhouse gas abatement and adaptation to climate change.

MPR has promoted environmental excellence in the mining and petroleum sectors through its annual Golden Gecko Awards. This award is keenly contested by industry in WA and MPR considers it has lead to improvements in environment management standards including the development of baseline studies, monitoring and rehabilitation. MPR considers that this type of approach is a sound, positive policy, which encourages employment of environmental specialists.

Information and reporting systems that would support the uptake of environmental goods and services to enhance overall business performance and development of the sector.

Western Australia has a robust reporting system that applies to all minerals, petroleum and associated downstream processing projects. Many of the major resources development projects approved under State Agreement Acts are required to report annually and triennially to Government on their environmental management. Also, for non-State Agreement projects that operate under the Mining or Petroleum Acts report annually their environmental management practices.

MPR suggests that this information could be better utilised if collated into an environmental database contributing to the status of knowledge of the Australian environment. A consequence of this is better environmental planning and management, as demonstrated by the WA North West Shelf Joint Environmental Management Study, which drew on information collected by industry operating in the North West Shelf region.

As previously stated, in the mining and petroleum sector opportunities for additional employment lies in the growth of the sector and the broadening of environmental interests beyond the traditional on-site measuring, auditing and rehabilitation activities. These types of activities are ostensibly operating within a best practice framework and any improvements will be marginal. It is the activities associated with the upcoming environmental issues (such as climate change and sustainable development), many of which are still evolving, that should be the principal focus of attention to support the uptake of environmental goods and services.