

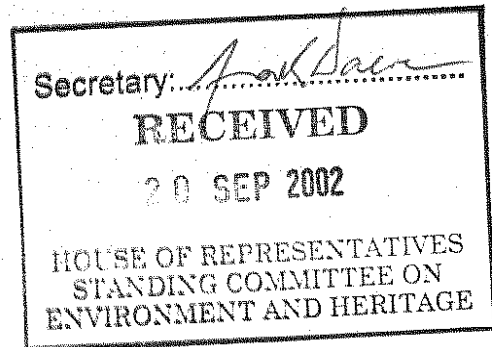


**Environment
Australia**

Department of the Environment and Heritage

SUBMISSION NO. 26

Mr Ian Dundas
Committee Secretary
House of Representatives
Standing Committee on Environment and Heritage
Parliament House
CANBERRA ACT 2600



Inquiry into Employment in the Environment Sector

Dear Mr Dundas

Thank you for inviting the Department of the Environment and Heritage to make a submission to the House of Representative's Inquiry into Employment in the Environment Sector. Please find attached the Department's submission (previously e-mailed to the Committee Secretariat) cleared by the Secretary, Roger Beale.

If you wish to discuss the submission further, please contact Krista Hancy, Policy Projects Unit, telephone (02) 6274 1396 or e-mail: krista.hancy@ea.gov.au.

Yours sincerely

Patrick McInerney
A/g AS, Policy and Accountability Branch
20 September 2002.





Standing Committee on Environment and Heritage

**House of Representatives Inquiry into Employment in
the Environment Sector**

**Submission from the Department of the
Environment and Heritage**

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1. Introduction

Definition of environmental goods and services

For the purpose of this submission environmental goods and services consist of:

- activities that produce goods and services to measure, prevent, limit, minimise or correct environmental damage to water, air and soil, as well as problems related to waste, noise and ecosystems
- activities such as the production of pollution equipment and
- environmental consultants and employees in the public sector involved in national park management as well as related activities such as tourism and conservation and environmental management in agriculture, mining and manufacturing.

This definition encompasses much of the work undertaken by the Department of the Environment and Heritage (DEH), as outlined in this submission.

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

The role and contribution of Government in the environmental goods and services sector

The Government plays a significant role in the environmental goods and services sector by providing policy settings and measures that encourage the establishment and expansion of the sector. Such initiatives include:

- facilitating communication and education and the establishment of networks across the environment sector
- providing leadership and support to encourage investment in the environment sector
- providing appropriate policy settings and measures (such as regulatory settings that go beyond command and control and support flexible and innovative environmental compliance as well as the utilisation of tools such as market based instruments) and encouraging the adoption of new technologies
- conducting and supporting research by industry, government and the community to assist and promote the environment sector
- encouraging sustainability as a positive business externality
- encouraging linkages between researchers, innovative enterprises, investors and larger utilities
- Instigating economic reforms to lift impediments to Australian enterprises to innovate and compete
- implementing major initiatives such as the National Action Plan for Salinity and Water Quality and the Natural Heritage Trust, which provide for expansion of the environmental goods and services sector, particularly in regional Australia.

Programs such as the National Action Plan for Salinity and Water Quality, the Natural Heritage Trust and those on climate change, while addressing serious environmental issues facing Australia, also offer businesses and the community the opportunity to develop skills and technologies which are self sustaining in the long term.

The Department of the Environment and Heritage (DEH) is involved in a range of initiatives to encourage the environment industry and stimulate investment, facilitating improved environmental performance by industry and encouraging the implementation of innovative solutions to environmental problems by industry, Government and the community.

These initiatives range from assisting directly in the marketing, building of networks and developing policy measures for promotion and expansion of environmental goods and services. Some initiatives undertaken by DEH are summarised below.

Facilitating communication and education and establishing networks

- Implementing the Government's National Action Plan for Environmental Education to address the needs of environmental education in Australia and provide leadership to the education, business, industry and community sectors to support the national effort towards achieving ecologically sustainable development.
- Developing and maintaining EnviroNET, a website providing a free, searchable database of Australian environment industry expertise, together with case studies of environmental solutions and a listing of relevant tertiary-level courses.
- Providing financial support for the staging of national environment industry conventions and trade exhibitions (for example Enviro 2000 in Sydney and Enviro 2002 in Melbourne). Such events provide discussion fora, networking and partnering opportunities and a showcase for environment industry expertise to be demonstrated to both local and international markets.

Providing government leadership and support to encourage investment in environmental industries

- Establishing a Memorandum of Understanding with China's State Environment Protection Administration and a working group established under the Australia-Indonesia Ministerial Forum. These forums have enabled government and industry to share information and develop networks and business opportunities in the environmental management field throughout Asia with a view to encouraging the uptake of Australian goods and services.
- Austrade appointed a manager with specific responsibility for developing environment industry exports in 2001. This manager works with DEH to encourage and assist the environment industry.
- Encouraging innovative, emerging industries such as the Australian renewable energy industry through programs that encourage innovation and implementation of regulatory regimes such as the Renewable Energy (Electricity) Act 2000, which established the Mandatory Renewable Energy Target (MRET).

Providing appropriate policy settings

- DEH plays a key role in the Natural Resource Management Ministerial Council's new national program on market based instruments (MBIs). The program will trial market based instruments to address salinity, water quality and biodiversity issues. MBIs use trading mechanisms, auctions and price signals to change behaviour.

Rather than prescribing behaviour or technology use, MBIs give more flexibility in the sustainable use and management of our natural resources by allowing the market to decide how best to internalize the full economic cost of their actions. MBIs are an innovative policy tool and we face many questions about how they can work. To help find some answers, all Australian governments have joined together by funding \$5 million in the first round of MBI pilot projects. An additional \$5m is conditional on a review of the first round of trials.

- DEH administers over twenty pieces of environmental legislation, providing a flexible regulatory framework to leverage and achieve specific environmental outcomes. This leverage is driving efficiency in a number of sectors and assisting to achieve greater competitive advantage in both national and international markets. For example with a combination of existing legislation (motor vehicle emission standards), the new *Fuels Quality Standards Act 2000* and industry support through investment and technological change, the Government will achieve significant decoupling of environmental impacts from growth in the transport sector.

In 2000, work commenced on developing the Environment Industry Action Agenda (EIAA). The Action Agenda was developed by a group of industry leaders, supported by a secretariat drawn from Environment Australia and the (then) Department of Industry, Science and Resources. The objective was to develop a policy framework underpinning growth in a commercially viable and internationally competitive Australian environment industry.

Work on developing the Action Agenda included:

- undertaking a strategic analysis of the industry's competitive position;
- developing and agreeing an industry vision, that clearly articulates goals and objectives for the industry to 2010;
- identifying impediments to the industry's sustainable growth; and
- developing a set of actions and clear roles for industry and government aimed at overcoming the industry's identified impediments and achieving the potential identified in the vision.

The Action Agenda was developed over a period of about a year, producing a discussion paper on major issues influencing the growth of the industry.¹ Copies of all of the published Action Agenda documents are provided with this submission.

The Action Agenda was launched by the Government and industry in September 2001. A discussion of the issues and recommendations outlined in the Action Agenda is included later in this submission.

Conducting and supporting environmental research by industry and government

Research initiatives implemented and supported by DEH include:

- Environment Resource Information Network (that provides extensive environmental data online to assist community, industry and government environmental decision making)

¹ *Investing in Sustainability: a Discussion Paper to Assist in the Development of an Environment Industry Action Agenda*, December 2000.

- Supporting the Tropical Savannah CRC and other research to support management decisions in Commonwealth national parks, including the independent monitoring and review of the environmental performance of uranium mines in the Alligator Rivers Region in the Northern Territory to ensure the protection of the Kakadu National Park from the potential impacts of uranium mining
- Provision of cash and in-kind support to Honours and PhD students wishing to undertake research in the Alligator Rivers Region (in 2001-02, 9 students were supported).
- Produced every five years, the Australian State of the Environment Report provides an independent and comprehensive national report on Australia's environment and heritage as basis against which to assess Australia's environmental performance.
- Promotion of the further development of an environmental goods and services sector through the provision of advice to the Commonwealth's National Research Priorities for Australia's research efforts, particularly on the issue of environmental sustainability.

Implementing major initiatives such as the National Action Plan for Salinity and Water Quality and the Natural Heritage Trust

The Natural Heritage Trust and the National Action Plan for Salinity and Water Quality are two major biodiversity conservation programs that have provided significant environment employment opportunities in a range of sectors including the information technology, scientific, commercial and community sectors. The new regional delivery mechanism that both these programs use has created a number of new structures for this delivery and therefore potential for regional and rural environment employment. Development and implementation of these programs also creates employment opportunities for scientists, policy makers and researchers. In addition, the Trust has funded approximately 650 community support positions and a number, over 2500, of project officers to help manage projects and assist the community to understand important on ground environmental actions, examples of which can be seen in Appendix 1.

Employment in the Department of the Environment and Heritage

In September 2002, the Department of the Environment and Heritage employed approximately 3,698 people across Australia. This figure includes Environment Australia and all Agencies and Statutory Authorities of the Portfolio including the:

- Bureau of Meteorology
- Australian Greenhouse Office
- National Oceans Office
- Sydney Harbour Federation Trust
- Great Barrier Reef Marine Park Authority.

The total number of consultancies engaged by Environment Australia during the financial year 2000-01 was 278, with a total expenditure on consultancy services of \$10, 063, 751. The most common reason to engage consultants was for specialised,

technical and professional skills or knowledge and the need for work to be conducted independently of Government.

The production of technical reports, handbooks and guidelines, data collection and analysis, feasibility studies, strategic assessments and the development of software and databases were among the categories for which consultants were engaged during the year.

The Australian Greenhouse Office delivers a range of programs and policies targeted at increasing the use of renewable energy and reducing greenhouse gas emissions in Australia. Many of these initiatives can offer a range of benefits to the community. These include, but are not limited to the following areas:

- Industry development and exports;
- Job creation;
- Regional development;
- Salinity mitigation;
- Waste reduction; and
- Electricity network benefits

Many renewable energy projects have created employment opportunities. Research undertaken by ACRE (the Australian CRC for Renewable Energy), the Australian EcoGeneration Association and the Renewable Energy Generators of Australia that compared job creation from three renewable energy projects with a gas and a coal-fired plant demonstrated significantly greater job creation per unit of investment from the renewable energy projects. A copy of the report entitled *Job and Investment Potential of Renewable Energy: Australian Case Studies* is attached to this submission.

Indigenous opportunities in the environmental goods and services sector

Indigenous people make a very significant contribution to environmental protection and services today. For example, indigenous people are employed as Indigenous Land Management Facilitators, in Indigenous Protected Areas, national parks as Cultural Heritage Officers, as well as Aboriginal Natural Resource Officers (NSW) with the Department of Land and Water Conservation.

The Director of National Parks, who heads Parks Australia, has responsibility for three national parks that are owned by the Aboriginal Traditional Owners and leased back to the Commonwealth to be jointly managed. Appendix 3 outlines the contribution in dollar terms made by Parks Australia to the environmental sector through expenditure on parks related activities including employment of staff, expenditure on park maintenance and infrastructure and visitor services. Approximately 25% of Parks Australia staff are Indigenous.

In effect, because of the Indigenous ownership, on-ground management and decision-making, the environmental and cultural heritage management of these parks is enhanced and the visitor experience is enriched. These parks also make a significant contribution to national and regional economies, creating employment, capacity building and enterprise opportunities.

The engagement of traditional owners has resulted in better park management, for example community members are involved in fire management practices throughout the parks, protecting cultural sites, and working with Parks staff to keep culture strong.

Aboriginal Lands are also important to the national effort in Environment protection and biodiversity conservation. Aboriginal lands are approximately 17% of the Australian mainland. Many of these lands have important conservation values, which create employment and training opportunities for Indigenous communities.

Short-term opportunities through projects developed under NHT often lead to on-going employment at the local level for Indigenous communities to address their long-term management objectives and aspirations.

Aboriginal people are a major underutilized/recognized source for future employment in environment sector. For example the Dhimurru Land management corporation were provided with seeding money through the Contract Employment Program for Aboriginals in Natural and Cultural Resource Management (CEPANCRM) in 1992 and are successfully involved in the management of the land (which has been declared an Indigenous Protected Area). These activities include traditional fire management practices and the development of eco-tourism ventures.

National Capability Statement on Australia's Environment Industry

Recognising that there was inadequate data on which to base policy development, Environment Australia commissioned the Centre for Strategic Economic Studies at Victoria University in late 2000 to prepare a report entitled the National Capability Statement on Australia's Environment Industry (Capability Statement). The primary objective was to address the need for comprehensive, authoritative and independent information on Australia's environment industry. A copy of the final report is provided with this submission.

The objectives of the study were to develop:

- a profile of the Australian environment industry, including economic and geographic distribution
- an assessment of the environment industry's contribution to achieving sustainable development
- an assessment of environment industry capabilities.

A copy of the final report is provided with this submission.

The Capability Statement estimated:

- that almost \$16.7 billion of environmental products and services were supplied by the Australian environment industry circa 1999-2000² and that
- industry employment in 1999-2000 was approximately 146,000 in some 5,700 businesses.³

The Capability Statement found that in key industry sectors:

² Centre for Strategic Economic Studies, Victoria University of Technology (2001): National Capability Statement on Australia's Environment Industry, p vi.

³ National Capability Statement, p vii.

- there were 1,727 operations providing *waste management* services at the end of June 1997(1,023 private and public trading businesses and 704 Government operations, employing 14,850 people, and realised total income of \$1.7 billion).
- excluding the Australian Capital and Northern Territories there were 549 management units (operations) in the *water and sewerage* industry in Australia in 1997-98, employing 16,344 people and generating almost \$6.2 billion revenue.
- in 1998-99, the water supply industry employed 16,920 people and realised turnover of \$3.1 billion, while the sewerage and drainage industry employed 7,080 and realised \$3.8 billion.
- renewable energy industry sales amounted to around \$850 million in 1995-96 with industry employment of around 6,000 - of which some 4,000 were involved in the manufacture, sales and servicing of wood heaters, and 1,000 in hydro-electricity generation.⁴

An estimated geographic breakdown of employment in environment industry production in 1999-2000 was given as:

State/Territory	Number employed in the Environment Industry Sector	Number of Businesses
NSW	49,500	1800
VIC	35,200	1300
QLD	23,500	900
SA	11,000	460
WA	17,000	700
TAS	3,200	150
NT	2,000	80
ACT	4,800	250

The information drawn together in the Capability Statement demonstrates that the environment industry is concentrated into a few very large businesses related to water, waste water and solid waste, and very small consultancy and niche technology businesses. Government plays a large role as an owner and operator of many water and waste utilities and as a purchaser of services (particularly local government and solid waste).

⁴ National Capability Statement, p v-vi.

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

Opportunities for future potential growth of environmental goods and services

Findings of the National Capability Statement

Drawing on earlier OECD work, the Capability Statement found that the major drivers of demand for environmental goods and services are:

- environmental regulations, including evolving international environmental standards and their enforcement through incentives and economic instruments
- consumer and community pressure reflecting changing wealth, awareness and lifestyle decisions
- changing consumer preferences - households are the largest consumer of environmental products and services in Australia, spending \$2.64b in 1996-97 (37% of total environment protection expenditure)
- changing business attitudes to environmental issues (recent research into socially responsible investing suggests that companies adopting a more pro-active approach to environmental management reduce their operating costs, leading to better financial performance and lower investor risk)
- technological developments and
- the changing nature of public expenditure.

The Capability Statement report states:

Increasing incentives for industry to improve environmental performance are leading to changes in the composition of demand, with a move away from remediation and treatment of wastes (clean-up) towards cleaner production and demand for environmental services.⁵

The Discussion Paper for the Environment Industry Action Agenda identified a similar list of demand drivers.⁶ The paper provides an overview of markets from a supply and demand perspective both domestically and internationally. Of particular interest to the Committee may be the analysis of demand drivers (Chapter 6) and the exploration of growth issues (Chapter 9) for the environment industry, which in turn will have an impact on future employment opportunities in this sector.

Discussing drivers of competitiveness, the Capability Statement states:

The OECD argues that competitive advantages in the environment industry derive principally from:

- *technological innovation (it has been estimated that 50 per cent of the environmental goods which will be in use in 15 years time do not currently exist)*
- *quality and service performance (the ability to adapt products to client needs, capability to produce effective and easily managed products)*

⁵ National Capability Statement, p 8

⁶ See discussion at pp 36-45 of *Investing in Sustainability: a Discussion Paper*.

- *marketing and export strategies (due to increasing globalisation of markets, and new market opportunities) and*
- *flexibility in production (possibility of rapid and low-cost changes in products with changing regulatory requirements).*

Because the environment industry embraces a wide range of products and services, of private and public sector players, and of large and small enterprises there will be different drivers in different parts of the industry. For example, small science-based technology providers will require venture capital and the expertise that goes with it, whereas large scale waste management or water and wastewater management businesses will require growth opportunities to enable them to realise economies of scale. This diversity is a key feature of the environment industry, and one that must be kept in mind.⁷

Environment Industry Action Agenda – discussion paper

The Discussion Paper for the Environment Industry Action Agenda suggested that opportunities for the Australian environment industry include:

- capturing business from the predicted environment market growth
- demand generated by mainstream businesses adopting more sustainable practices such as eco-efficiency and triple bottom line accounting
- spin-offs from increased Government investment in reversing land and water degradation and
- international opportunities arising from growth in the demand for environmental goods and services.

Better access to finance (particularly project finance and venture capital), education and training, skills gaps, e-commerce and new economy, market deregulation, industrial reform and regional issues were explored. Recent analyses of options to facilitate export and industry growth are also canvassed in the paper.

Natural Resource Management

A continuing and expanding area for environment employment is the use of volunteers for the delivery of biodiversity conservation outcomes, it is important to note the contribution that volunteers make in a range of areas and the full economic value of this unpaid work. An estimated 370 000 volunteers have contributed to Natural Heritage projects to repair and regenerate the local environment in communities across Australia. The potential for this number to increase is high as the new regional arrangements under NHT 2 are implemented. Capacity building of people working in the NRM sector to contribute towards achieving sustainable resource management is outlined in Chapter 3.

World Heritage

The Commonwealth Government maintains a range of programs aimed at insuring that Australia's obligations as a signatory to the World Heritage convention are met. Separate budget appropriations are provided to run and maintain the values of the World Heritage properties within Commonwealth jurisdiction – Uluru Kata Tjuta, Kakadu, the Great Barrier Reef and Heard Island and the MacDonal Islands.

⁷ National Capability Statement, p 11.

The remaining ten World Heritage properties, which are under state jurisdiction or jointly managed with the Commonwealth, receive top-up funding from the Commonwealth through the NHT to fund additional costs associated directly with the protection, conservation and presentation of their World Heritage values.

The future prospects for employment based on the Commonwealth's funding to satisfy its World Heritage responsibilities is naturally highly dependent on the maintenance of that funding.

The Commonwealth currently has one nomination (Purnululu National Park) under consideration by the World Heritage Committee for inclusion in the World Heritage List and is considering the nomination of a number of other prospective World Heritage properties. If successfully listed, these additional properties may provide additional employment opportunities.

A study commissioned by the Australian Heritage Commission examining the contribution of World Heritage Branding to nature tourism found that:

- Total Visitor numbers at six Australian World Heritage Areas are commonly up to an order of magnitude higher than at comparable sites, both pre and post- listing
- For the few Australian World Heritage with adequate data to test, World Heritage listing does appear to have a positive effect on measures of tourism expenditure, particularly by increasing the proportion of international visitors.⁸

The private eco-tourism industry continues to embrace the World Heritage concept in its marketing and promotional campaigns. Tourist use of Australia's World Heritage Areas is now worth over two billion dollars per annum and anecdotal evidence indicates that the use of World Heritage areas by the tourism industry will increase into the future. This suggests that World Heritage related employment opportunities in the private tourism sector will also increase in the future.

National Heritage

On 27 June 2002 legislation was introduced to Parliament to establish a system of places of national heritage significance (covering natural, cultural and historic sites). The sites of national significance will be listed by themes, which will be selected to enable a cooperative program of national, state and local identification to produce a distinct package that can be managed, marketed and presented. At the outset development of the national system will target regional tourism.

Regionally coordinated heritage tourism plans involving key stakeholders will be developed in order to promote the economic potential of the historic sites. Current case studies include the Birdsville and Strzelecki Tracks Historic Heritage Survey and the Lake Eyre Basin Inland Rivers Heritage Tourism strategy that are being developed in partnership with the Department of Transport and Regional Transport and relevant State Agencies.

It is predicted that international tourism visitation will double over the next ten years. Natural and cultural heritage places throughout Australia are key business assets of the tourism industry and marketing of these places will lead to increased opportunities for the industry. A National Strategy that includes an action plan for the management and

⁸ International Centre for Ecotourism Research, Griffith University (2002), World Heritage Icon Value – Contribution of World Heritage Branding to Nature Tourism, p 1.

promotion of sustainable tourism in heritage places is being developed in Australia and is expected to be completed by 2003.

Job Creation from programs and policies supporting renewable energy

The AGO has put in place a series of complimentary and strategic measures to support the uptake of renewable energy in Australia in the following three areas:

- commercialisation – providing the link from R&D to widespread adoption
- industry development - developing the capacities of the renewable energy industry broadly (education, standards, training, accreditation)
- deployment - putting established technology on the ground and establishing familiarity and experience.

Each of these areas delivers job creation to varying degrees. Reliable estimation of the amount of job creation above business as usual levels is problematic. Many of the projects supported under commercialisation programs are developing technologies that will have extensive applications in Australia and abroad. For these projects, the level of job creation will depend on the uptake of the technology in the marketplace, which can be difficult to predict with any reliability. It should also be noted that as the initiatives the AGO is undertaking are complimentary in nature, there is some overlap between the job creation under each initiative.

The ACRE study on Job and Investment Potential of Renewable Energy concluded “*it is clear that (renewable energy projects) can deliver considerable economic activity and jobs, with much of this going to regional areas. The renewable energy projects studied all consistently showed higher Australian content, and greater employment creation per dollar invested, per MW installed and per MWh generated, than the two fossil fuel generation options*”.

Appendix 2 examines the AGO’s renewable energy policy and program initiatives and their likely impacts on job creation.

Investment in greenhouse sinks- impact on employment

The AGO has a number of programs aimed at developing the tools and information required to support investment in greenhouse sinks. Importantly the National Carbon Accounting System provides a complete accounting capability for sources and sinks of greenhouse gas emissions from Australian land based systems. The Bush for Greenhouse program is developing a range of tools for the design and management of greenhouse sinks and carbon pooling, and for the establishment of carbon brokering arrangements to secure and manage investment by the private sector, governments and individuals in vegetation to reduce greenhouse impacts. An intergovernmental working group has also been set up to promote national consistency across a range of issues.

Future clarification of private sector requirements to assist Australia in meeting its greenhouse reduction target will substantially encourage further carbon investment in both forestry and environmental plantings. Ensuring the tools and information are available will be necessary to promote on going stimulation of investment into greenhouse sinks projects. Specifically, information requirements particular to environmental plantings will need to be catered for as, without this information, it is unlikely that significant investment to enable broad scale revegetation will occur.

Local Government employment opportunities in the environment sector

The many and varied responsibilities of Local Government include environmental health regulation, road building and maintenance and traffic management, municipal waste management, land use planning and development, pollution control and monitoring, biodiversity conservation, local economic development and the provision of recreation facilities and community services. As well as their direct responsibility for urban environments, Local Governments have a significant role to play in preserving and restoring the health of extensive tracts of rural lands and our natural habitat.

Many Australian Councils are providing leadership on sustainable development and environmental protection. Local governments are increasingly under pressure to provide a higher level of environmental services such as recycling, energy efficiency, re-vegetation and biodiversity conservation services. In 1999-2000 local governments spent \$2.5 billion dollars on environmental protection.

There is likely to be significant and increasing employment in environmental areas within local councils as a result of:

- an increase in local government environmental responsibilities
- an increasingly significant number of people employed in delivering environmental services in some areas (in Victoria, approximately 5.4 people per council)
- staffing gaps in other areas of local government responsibilities.

Barriers to future potential growth of the environmental sector

Potential Development Constraints on the development of the environment industry outlined in the Capability Statement⁹ include:

- Inappropriate regulation, which may prescribe solutions in such a way as to discourage innovation and reduce effective competition. Other problems with regulation include the lack of it in some areas, inconsistent application, uncertainty about its operation, too rapid regulatory change and a possible discouraging effect on trade opportunities.
- Many new, small firms in the industry. Constraints for such firms can include a shortage of risk capital and an inability to access equity capital, high levels of uncertainty relating to rapid change in the industry, and dependence on a regulatory framework that is outside their control.
- Newness of parts of the industry – undeveloped markets on the demand side, with a limited numbers of customers, a lack of information about new solutions, uncertainty and risk on the supply-side. High dependence on R&D to provide solutions also brings with it additional risks, both in relation to demand and in handling supply.

The Discussion paper for the Environment Industry Action Agenda found that few, in any, of the environment industry growth impediments are peculiar to this sector. Industry fragmentation and the structure of the Australian industry may

⁹ National Capability Statement pp 152-154

present a barrier to environment technology diffusion and up-take. It is composed mainly of services providers (58%), followed by equipment manufacturers and suppliers (28%) and resource providers (14%). The environment industry's capacity to innovate is also an issue for consideration in market growth.

Policy measures and initiatives implemented by the DEH that address the barriers to future growth of the environment industry are outlined in Chapter 4.

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

Capacity building to achieve sustainable natural resource management

Capacity building relates to a range of activities by which individuals, groups and organisations improve their capacity to achieve sustainable natural resource management. Capacity in this context includes awareness, skills, knowledge, motivation, commitment and confidence. While regional bodies are a key target audience for capacity building, it is equally an issue for diverse players such as landcare groups, indigenous communities, industry sectors, local government and State/Territory and Commonwealth Government agencies.

Capacity building for natural resource management goes beyond the traditional, top-down approach of enhancing skills and knowledge through training and provision of technical advice. It focuses on *enhancing genuine community engagement* in all aspects of natural resource management (NRM), from planning to on-ground actions. Therefore, in addition to the transfer of technology and technical capability, capacity building should foster social cohesion within communities, and build both human and social capital. For the purposes of this framework, human capital refers to the capability of individuals, and social capital refers to the level to which social networks, relationships and processes within a community support individuals to exercise their capabilities.

To obtain on-ground improvement in our environment, those who live and work directly with it have a major role to play along with government and industry. It is well recognised that in order to achieve long-term environmental outcomes, investments in people are as critical as investments in on-ground works. The long-term success of NRM programs depends on the degree to which the people owning, living with and dependant on our natural resources are able to make informed decisions that result in sustainable NRM and ongoing economic viability. Without this investment in people at all levels, including Government, there will be little chance of securing positive and long-lasting natural resource outcomes. In essence, long-term sustainable NRM depends largely on building human and social capital.

Recognising that investment in people is important in achieving environmental outcomes, the Government established the Commonwealth Natural Resource Management Capacity Building Framework in 2001. This initiative is further discussed in Chapter 4.

The introduction of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) has promoted the upgrading of skills in industry and environmental goods

and service sectors to enable best practice standards to be met in undertaking environmental impact assessments while at the same time reducing duplicate processes.

Industry attitudes and performance

A study commissioned by the National Environmental Education Council has examined the findings of previous surveys and studies that look at industry attitudes and performance in the areas of environmental management, sustainable development, corporate social responsibility and corporate citizenship.

The implications of the report are still being assessed however several issues have been highlighted:

- there is limited understanding of environmental concepts and approaches. Many companies have not heard of eco-efficiency or environmental management systems. Corporate citizenship is often taken to mean philanthropic activities and, along with environmental considerations, is regarded as marginal to core business.
- the number of companies with well-developed environmental management systems is relatively low and these are restricted to larger companies.
- the most common environmental management initiatives by companies over the past few years have involved waste management, waste minimisation, and recycling. Product stewardship, marketing of 'green' products and life cycle assessment is very uncommon.

Companies appear to be planning only modest changes and the study points to a clear need to translate theory into practice.

Further to the report, Environment Australia is currently looking to identify, where possible, potential approaches to achieve change in industry attitudes.

The National Environmental Education Council

With Australia's environment industry aiming for a sales target of \$40 billion by 2011¹⁰, there is growing demand for graduates with environmental skills and knowledge.

The National Environmental Education Council, an initiative of the Commonwealth's National Action Plan for Environmental Education, has held a series of summits at various Australian universities. The summits bring together speakers from business, industry, government organisations and tertiary institutions to exchange views on industry's needs and the tertiary sector's capacity to prepare graduates equipped with necessary environmental and professional skills.

The Council believes universities need to integrate environmental education across the curriculum and to 'practice what they teach' by developing and maintaining ecologically sensitive campuses. Universities and industry need to address new and emerging issues such as environmental legislation and reporting requirements, triple-bottom-line auditing, and the growing demand for more eco-efficiency in product performance and service delivery, innovation and commercialisation.

¹⁰ Environment Industry Action Agenda p 8.

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

Environment Industry Action Agenda

The industry's agreed vision, expressed in the Action Agenda, is

To add value to all Australian business by enabling competitive environmental outcomes, and in the process build an environment industry with annual sales exceeding \$40 billion by 2011.

The 18 recommendations of the EIAA are grouped into four broad themes:

- valuing and pricing the environment;
- building markets and competitiveness;
- innovation; and
- marketing the industry.

Environment Australia and the Department of Industry, Tourism and Resources are coordinating implementation of the recommended Commonwealth Government actions identified in the Action Agenda, which fall under the policy responsibility of a range of portfolios.

The industry has established the Barton Group of industry CEOs to oversee implementation of industry's EIAA recommendations. The Barton Group's initial efforts have concentrated on dialogue with State governments to identify jurisdictional priorities and how these may fit with the EIAA actions. Members of the Barton Group have also been identified to 'champion' the following priorities:

- the development of an export strategy
- fostering of clusters, networks and partnerships within the environment industry and alliances with 'client' industries
- progress with financial sector reforms and environment industry metrics;
- strategies for sustainable building and construction
- preparation of a set of 'powerful ideas' papers, on water, energy and construction, solid waste - resource recovery, resource condition standards, innovation and exports
- research into the growth of the tourism industry as a model for the mobilisation of the environment industry
- preparation of a paper on the potential for light handed regulation and stewardship.

In Environment Australia's view, the existing policy measures are sufficient at this stage to encourage development of the industry, bearing in mind industry capacity to take advantage of new and existing opportunities for innovation and investment. Substantial growth in demand for environmental goods and services is likely to flow from:

- existing and prospective environmental regulation in Australia and overseas (reflecting the communities' growing demand for ecological sustainability);
- the environmental consciousness of the rapidly growing middle class populations of East Asia;
- growing supply chain and consumer demands for environmental or broader sustainability characteristics in goods or on the part of supplying companies;

- growing corporate and investor interest in corporate environmental performance, environmental risk, and 'triple bottom line' reporting; and
- the adoption by Australian governments of market-based instruments as a response to environmental problems.

However, opportunities exist to enhance links with existing policy measures to encourage growth in the environment sector. Research in particular offers significant potential with the opportunity to develop technologies, which will have major international appeal. National Research Priorities and Co-operative Research Centres offer a vehicle to develop self-sustaining environmental industry opportunities.

Australian Industry's Sustainable Competitiveness

Several of the issues outlined in the Action Agenda report were examined by a Working Group of the Prime Minister's Science, Engineering and Innovation Council, which reported in May 2002 on 'Australian Industry's Sustainable Competitiveness'.¹¹

Three of the Working Group's recommendations are of particular relevance to the development of demand for environmental goods and services:

Recommendation 3:

Government should, in its leadership role and in partnership with industry associations, develop a framework to assist industry, particularly SMEs, to move forward along the sustainability pathway and also play a role in raising awareness of the need for, and how to, operationalise sustainability by:

- encouraging a greater focus on SME sustainability reporting through industry associations;
- collaborating with relevant industries to apply voluntary sustainability sector agreements.

Recommendation 4:

- Government to recognise the need to encourage innovation in sustainability performance collaborating with industry associations (sector by sector) to define, develop and promote a voluntary set of common national metrics and reporting structures, relevant to that industry, that are compatible with international frameworks such as the Global Reporting Initiative.

Recommendation 5:

- Government purchasing policy should incorporate sustainability criteria, including life-cycle costing, to reward adopters of sustainability.¹²

The Department of the Environment and Heritage is implementing and continuing to develop initiatives that provide an adequate response to the recommendations of PMSEIC including:

- development of agreements with 23 industry associations to promote the benefits of eco-efficiency ('doing more with less'), where assistance is provided to develop tools to improve both environmental outcomes and financial bottom lines

¹¹ The report is available on the internet at www.dest.gov.au/science/pmseic/meetings/8thmeeting.htm

¹² Prime Minister's Science, Engineering and Innovation Council working group report, (2002) p iii.

- the promotion of public environment reporting and of market consideration of environmental risk in investment and lending (further discussed in Chapter 5)
- development of a voluntary corporate environmental reporting guide, including Australian indicators consistent with the Global Reporting Initiative (refer chapter 5)
- development of a voluntary Environmental Purchasing Guide for Commonwealth Procurement
- continuing work on the use of market based instruments through involvement in the pilot national market based instruments program (discussed in Chapter 1)
- Implementation of the Commonwealth Natural Resource management Framework.

Capacity Building Framework

It is well recognised that in order to achieve long-term environmental outcomes, investments in people are as critical as investments in on-ground works. Consequently, late in 2001, EA and AFFA jointly prepared a Commonwealth Natural Resource Management Capacity Building Framework, initially as a guide for investment under the National Action Plan for Salinity and Water Quality and the Natural Heritage Trust, but with the intention of it supporting broader natural resource management (NRM) processes. The over-arching emphasis of the framework is the need to enhance the capacity for wider community engagement in the development and implementation of regional NRM plans and processes. It focuses on fostering the behaviour and practice change that is essential in moving towards longer-term sustainable natural resource management goals.

The Framework defines the goal for capacity building as “*Informed and improved decision-making, and the implementation of these decisions resulting in the sustainable management of natural resources.*”

The Framework specifies four areas of potential investment in capacity building:

- *Awareness Raising:* Individuals within the community must be aware of regional NRM issues, and understand the link between these issues and the long-term viability of the community.
- *Information and Knowledge:* Natural resource managers and users need to be able and willing to access the necessary information, data and science – biophysical, social and economic – to make sound NRM decisions.
- *Skills and Training:* Natural resource managers and users must be equipped with the necessary skills to effectively participate in the planning for, and implementation of, sustainable NRM at the property, local and regional scales.
- *Facilitation and Support:* Support systems are required to ensure the engagement and motivation of the community, build social capital and enable skilled NRM managers and users to exercise ownership over regional NRM decision-making processes, and effectively implement actions arising from these processes.

Monitoring the achievement of intermediate outcomes, such as attitude, practice and behaviour change is critical in assessing the impact of short-term investments of NRM programs such as the NAP and NHT. Capacity building activities are key mechanisms

through which these intermediate outcomes can be realised. Monitoring and evaluation of the effectiveness of these activities in bringing about the desired change should be an integral component of developing and implementing a capacity building plan. Environment Australia and Agriculture, Fisheries, Forestry Australia are continuing implementation of the Commonwealth Natural Resource Management Capacity Building Framework.

Encouraging indigenous employment

The following initiatives are some that may encourage indigenous employment in the environment sector:

- development of employment programs for Aboriginal people in NRM, such as the former Contract Employment Program for Aboriginals in Natural and Cultural Resource Management (CEPANCRM). Through the CEPANCRM, Parks Australia established a model Government program to assist Indigenous communities and groups to initiate economic independence
- provision of venture capital for eco and cultural tourism
- replacing individual program based initiatives with more combined and collaborative investments across jurisdictions
- encouraging joint venture approaches with the private sector
- extension of stewardship arrangements between Aboriginal communities and other agencies responsible for land management.
- promotion of the design and delivery of program which maximise Indigenous employment and management options
- increased involvement of Aboriginal people particularly traditional owners in decision making and direct management of national parks
- increased emphasis on cross cultural skills acquisition
- encouragement of capacity building initiatives for Aboriginal people particularly those working in jointly managed national parks.

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

Triple bottom line reporting

Several developments in corporate information and reporting systems could support the uptake of environmental goods and services and/or enhance overall business performance.

There is growing interest in corporate public environmental reporting, or the broader 'triple bottom line' reporting on environmental and social outcomes in addition to financial results. Some 100 Australian companies have published such reports. Greater corporate adoption of this form of reporting would appear likely to lead to increased management attention to environmental issues and consequent demand for environmental goods and services. The development and expected release in late 2002 of a voluntary corporate environmental reporting guide should make this form of reporting easier for Australian companies.

Availability of information on individual companies' performance inevitably leads to comparison of performance by investors and lenders, which may also be a spur to further management attention and consequent demand for goods and services. The Government has provided funding assistance to the Sustainable Investment Research Institute to help develop an internet database called *Sustainability Reporter*¹³, which will help meet increasing demand for information on environmental and social performance. Data for the top 100 companies should be available in late August 2002, with the project due for completion by December 2002.

The National Pollutant Inventory (NPI)

The National Pollutant Inventory (NPI) is an internet database designed to provide the community, industry and government with information on the types and amounts of certain substances being emitted to the environment. Australian industrial facilities using more than a specified amount of the substances listed on the NPI reporting list are required to estimate and report emissions of these substances annually. Currently industries are required to report their emissions to air, land and water of 36 of the 90 substances listed on the NPI. Reporting on emissions of the longer list of 90 substances will commence when industry reports on 2001-02 emissions. This public reporting of emissions may also lead to greater demand for environmental goods and services.

Ecologically Sustainable Development reporting

Reflecting the Commonwealth government's support for public environmental reporting in the private sector, the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) requires Commonwealth organisations to include in their Annual Reports a section detailing the environmental performance of the organisation and the organisation's contribution to Ecologically Sustainable Development (ESD).

The identification, monitoring and reporting of environmental issues will help Commonwealth organisations improve their environmental performance and in the process improve their skill base and refocus employment opportunities (for example, from waste disposal to recycling/composting initiatives).

Environmental Education

There is a need to assimilate environmental education initiatives into existing approaches and everyday behaviour in schools to ensure students leave school with the knowledge and skills to enable them to contribute to an ecologically sustainable future.

The National Environmental Education Network is responding to this need. An initiative of the Commonwealth's National Action Plan for Environmental Education, the Network is made up of representatives drawn from the environment and education departments of Commonwealth, State and Territory Governments. The Network is designed to encourage a coordinated approach to environmental education.

A major project of the Network is the Sustainable Schools program under which waste and energy reduction and biodiversity targets will be integrated into the curriculum and

¹³ See www.sirisdata.com

daily running of schools. The Commonwealth is committing \$200,000 to pilot programs in Victoria and New South Wales, which if successful, have the potential to be adopted by other States and Territories, creating a national approach to developing in students an appreciation of ecologically sustainable development.

Biodiversity and Business Initiative

Produced as a result of the collaborative efforts of Environment Australia, Earthwatch, CSIRO and industry, the *Earthwatch Business and Biodiversity Guide (2001)* outlines the business case for protecting biodiversity and provides a framework for businesses to understand their legal responsibilities as well as guide to measuring their biodiversity impacts.

The Biodiversity and Business initiative has identified a need for business to document the range of biodiversity impacts that result from business activities and processes. The documentation process also contributes to several other initiatives such as, triple bottom line reporting, environment reporting and environment management system certification and processes. To implement these initiatives business often employ consultants and researchers to help them capture a more complete picture of their business systems and their interactions. Frequently, businesses also have environmental professionals on the permanent payroll.

A copy of the Business and Biodiversity Guide is included with this submission for the Committee's reference, as well as relevant publications from a variety of sources.

References

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Appendices

Appendix 1: NHT funded programs and their contribution to employment

Program	Objective	Contribution to employment
Waterwatch Australia	Provide training and support to the community in water monitoring, as well as awareness raising of waterway and catchment issues amongst the community	120 part-time coordinators (equivalent to 80 full-time) are employed in regional areas to work with the community on water monitoring and education and awareness raising activities
The Marine and Coastal Community Network	Assist community involvement in caring for Australia's oceans and coasts. It does this through a variety of media, including national and state based publications, radio shows in five states and a website	The Network consists of nine paid personnel and a participants database of 8,900 individuals and organisations
Coastcare	A comprehensive network that supports coastal community volunteers in the implementation of environmental works as funded under Coastcare	The program employed 26 facilitators throughout coastal regions of every state and the Northern Territory. The facilitators actively promote Coastcare and its objectives, working with many stakeholders including indigenous groups, industry and government agencies
Bushcare	To reverse the long term decline in the quality and extent of Australia's native vegetation cover	<p>Bushcare national network employs</p> <ul style="list-style-type: none"> • 11 State/Territory Coordinators • 52 regional facilitators, and • 65.5 positions funded under the Greening Australia Bushcare support contract <p>The National Bushcare program funds a number of networks. In addition there have been innumerable 'project officers' employed to manage and implement Bushcare projects, along with a considerable contingent of casual labour required for project implementation.</p> <p>The Bushcare program has contributed to regional employment in two broad areas. The primary contribution is through the Bushcare Network and to a lesser extent, through a number of individual small environmental contracts.</p>
World Heritage Programs	Management of World Heritage Area's, ensuring conservation of these significant sites and that Australia's obligations as a signatory to the World Heritage convention are met	<ul style="list-style-type: none"> • In excess of 100 full-time positions are funded to support the management of the Tasmanian Wilderness World Heritage Area and the Wet Tropics World Heritage Property • Full-time Executive Officers are funded to assist with the management and administration of four state-managed World Heritage properties • In 2001-02 employment of approximately 20 positions in other agencies undertaking around 50 World Heritage management related projects, was facilitated by \$4.5 m of Commonwealth allocated NHT funds.

Appendix 2: Australian Greenhouse Office Renewable Energy Programs and their likely impact on future job creation

Program - brief description	Likely job creation impacts
<p>The Renewable Energy (Electricity) Act 2000, establishing the Mandatory Renewable Energy Target (MRET), came into force on 1 April 2001, and is a cornerstone of Australia's drive to reduce greenhouse gas emissions arising from electricity generation and use.</p> <p>The MRET will stimulate the growth of a vibrant and diverse Australian renewable energy industry by providing a guaranteed market for an additional 9500 GWh of electricity per year from renewable sources by the year 2010. It is designed to achieve this outcome at minimum cost to the community through a flexible, market-based mechanism whereby tradeable Renewable Energy Certificates (RECs) may be created for renewables-based electricity generation, and for eligible installations of solar water heaters.</p>	<p>The MRET is estimated to result in between \$2 and \$4 billion investment in renewable energy technology deployment and ongoing operation and support. Although some of the technologies being deployed on a large scale (such as wind turbines) are essentially overseas technology, there is still significant local value adding for design, installation civil works and ancillary equipment and support services. In the case of the wind energy industry, this is estimated to be 70% of the total project cost and this is likely to increase when the manufacture of wind turbine components commences in Australia.</p> <p>Given the distributed nature of renewable energy resources, a substantial portion of the employment creation to be stimulated by the MRET measure is expected to occur in regional areas, especially where renewable energy sources such as wind, sun hydro and biomass resources are abundant, and locational benefits are able to be realized.</p>
<p>The \$55.6 million <u>Renewable Energy and Commercialisation Program (RECP)</u> is a competitive grant programs supporting the development and commercialisation of innovative renewable energy equipment, technologies, systems and processes. The RECP includes a \$6 million industry development component This component is available to address barriers to the uptake of renewable energy, quality issues, promotion, resource assessment and consumer education where a clear industry development outcome will result</p> <p>The RECP consists of a series of funding rounds held at six monthly</p>	<p>The principal benefits from these projects will come with the wider dissemination of the technologies into the marketplace, following the successful commercialisation. This is very hard to estimate, as it will depend on a wide range of variables. However as a result of all projects being implemented successfully, it is likely that several thousand jobs would be generated both directly and indirectly. Preliminary estimates prepared last year indicated that up to 2,200 jobs could be created from the successful implementation of all the projects.</p>

Program - brief description	Likely job creation impacts
<p>intervals. Some 70 projects have been supported covering wide range of technologies including biomass, wind, solar photovoltaics, solar thermal, wave power, hydro, geothermal and enabling technologies.</p> <p>The Renewable Energy Equity Fund (REEF) program supports small, innovative enterprises to develop renewable energy technologies by providing venture capital. The Australian Greenhouse Office holds policy responsibility and AusIndustry manages the Fund. The REEF program became operational in December 2000 with the appointment of the fund manager, CVC REEF Investment Managers Limited. Commonwealth funding of \$17.723 million will be matched at a 2:1 ration with private sector capital.</p>	<p>This fund is specifically aimed at assisting renewable energy companies to expand and generate new business. Job creation is an obvious outcome of this process, but is difficult to quantify. The program is scheduled to run for 10 years from commencement.</p>
<p>The Photovoltaic Rebate Program was introduced on 1 January 2000. With total funding of \$31 million over four years, the program is designed to raise public awareness Australia wide about the domestic use of solar technologies to generate electricity.</p> <p>Since this program commenced, demand for rebates has been very strong.</p>	<p>The International Energy Agency's Co-operative Programme on Photovoltaic Power Systems National Survey Report of PV Power applications in Australia 2001 reported that the estimated job creation associated with the PV industry in Australia was as follows:</p> <ul style="list-style-type: none"> • Research and development (non-company): 60 • Manufacturing of PV system components, including company R&D: 230 • All other (including installers and electricity utilities): 290 • Peter Lawley, Business Development Manager, Pacific Solar, has estimated that: <ul style="list-style-type: none"> • 15 people are employed per megawatt (MW) of PV and balance-of-system manufacture; • 15 people employed per MW of sales, installation and service; • 5 people employed per MW in research and development,

Program - brief description	Likely job creation impacts
<p>The Renewable Remote Power Generation Program (RRPGP) provides special purpose payments to participating States and Territories for the provision of rebates to install renewable generation technologies to reduce the use of diesel fuel for electricity generation. The program is funded from excise paid on diesel consumed to generate electricity by public generators. Participating States and Territories are allocated funding on the basis of the relevant diesel fuel excise paid in each jurisdiction. Up to \$264 million in funding is available to this program.</p>	<p>education and training.</p> <ul style="list-style-type: none"> On this basis the PVRP was responsible for the employment of approximately 50 people last financial year. <p>Over the life of the RRPGP, it is estimated that this program will result in the investment of between \$400 and \$900 million in renewable energy and associated enabling technologies in remote areas of Australia. Depending on the proportions of various renewable technologies supported, this will reduce Australia's diesel imports by between 50 and 200 million litres per year and directly create at least 350 jobs.</p>
<p><u>Greenhouse gas abatement strategies</u> include the use and promotion of greenhouse "sinks", such as trees and other vegetation, to remove carbon from the atmosphere. Additional investment in new forestry ventures has already been stimulated by the carbon sequestration potential of the forestry project.</p>	<p>Employment opportunities range from those associated with traditional forestry operations through to activities associated with revegetation projects (environmental plantings) including an ongoing role in maintaining and measuring the carbon sequestration from the vegetation. In addition investment in greenhouse sinks has many direct and indirect spin off effects on employment.</p> <p>Given the present uncertain greenhouse policy framework much of the investment is about hedging current investment against future carbon risks. This generally means investing in forestry projects and ensuring the investment also buys the rights to the carbon sequestration from that forestry project.</p> <p>There is currently a negligible amount of carbon investment in broad scale revegetation for environmental purposes (as opposed</p>

Program - brief description	Likely job creation impacts
	<p>to traditional forestry). Environmental plantings provide a limited scope for future harvest and sale of wood products to recoup investment (indeed in many projects there is no harvest), and as such are currently a higher risk option than traditional forestry. A robust framework for carbon investment in environmental plantings would provide a significant impetus for the creation of significantly expanded environmental goods and services in regional Australia. The potential level of carbon investment in environmental plantings could be a major driver for broad scale revegetation across Australia.</p>

**Appendix 3: Commonwealth reserves managed under the
Environment Protection and Biodiversity Conservation Act 1999
for the financial year 2000-01**

Commonwealth reserve name	Year declared*	Visitors	2000-01 net operation cost (\$ million)	2000-01 capital expenditure (\$ million)	2000-01 revenue raised (\$ million)
Terrestrial Reserves					
<i>Reserves managed jointly with Traditional Owners</i>					
Uluru-Kata Tjuta National Park	1977	396 500	11.32	3.71	5.9
Kakadu National Park	1979	183 100	14.51	1.91	2.69
Booderee National Park	1992	500 000	5.07	0.72	0.62
Christmas Island National Park	1980	NA	1.76	0.2	0
Norfolk Island National Park and Botanic Garden	1986	30 000	0.73	0.11	0
Australian National Botanic Garden	1991	367 500	7.16	0.32	0.15
Pulu Keeling National Park	1995	NA	0.82		
Calperum and Taylorville Stations ***			0.4		
RAN Weapons Range Beecroft ***					

* Year in which the area was declared under the *Environment Protection and Biodiversity Conservation Act 1999* or the former *National Parks and Wildlife Conservation Act 1975*.

** Managed by the Marine and Water Division, Environment Australia. Total expenditure on Commonwealth marine reserves in 2000-01 was \$0.9 million.

*** These areas are managed by Parks Australia South but are not statutory reserves.