



# The Guide to Environmental Careers in Australia 2010

2nd Edition

**The Guide to Environmental Career in Australia 2010 was written following a research project undertaken by RMIT University and The Environmental Jobs Network.**

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**Edition:**

This is the second edition of The Guide to Environmental Careers in Australia. The first edition was published in 2004 and written by Leonardo Ribón-Tobón and Charley May of the Environmental Jobs Network and Michele Bauer.

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**Acknowledgement:**

RMIT University and the Environmental Jobs Network would like to thank all the organisations who helped to promote the research (listed in the appendices) and all the 432 environmental professionals and 4 recruitment specialists who took the time to complete a survey. A bigger thankyou to the 17 people who took twenty minutes out of their busy day to talk to us about their career and help put together the career profiles featured in the guide. Further thanks goes to Anne and Alesha who worked on the guide relentlessly right up until the end.

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## Contents

Why have a Guide?	5
The Environmental Industry	7
Background	7
Current Green Collar movement	9
In times of economic crisis	10
Personnel challenges and opportunities	10
Where to next	11
The Careers	14
Introduction	14
Careers in different sectors	14
o Air quality and protection	16
o Climate change and carbon trading	18
o Conservation and management of biodiversity	22
o Energy efficiency and renewable energy	27
o Environmental consultancy	31
o Environmental education and training	37
o Environmental impact assessment	42
o Environmental sustainability policy, legislation, protection and enforcement	46
o Environmental sustainability research and development	50
o Green design build and construction	53
o Land management, quality, protection and site restoration	57
o Natural resource management	61
o Sustainability communications and public awareness	65
o Sustainable development and planning	70
o Sustainable living	74
o Waste management	78
o Water conservation	82
o Water quality and protection	87
The Environmental Career Matrix	90
Career pathways	96
The Career Advice	98
Know the industry	98
Know the role	99
Know yourself	100
Applying for roles	100
Using your skill base	101
Educational requirements	102
Career changers	103
Where to go for help	104
The Rationale and the Research	108
The rationale	108
The research – methods and statistics	109
References	115
Appendices	117

## Diagrams, Graphs and Career Profiles

### Diagrams:

The Environmental Industry Egg	13
The Environmental Career Matrix	92
The Environmental Career Matrix – a layer	93
The Environmental Career Matrix - a cell	94
Five ways to an Environmental Officer	96
Five ways to the climate change and carbon trading sector	97
Five ways from a B.Eng Environmental Engineering	103

### Graphs:

Survey base: - Age of respondents	110
Survey base: - Level of education of respondents	111
Survey base: - Where the respondents are based	111
Survey base: - Length of time in environmental industry	112
Survey base: - The sector in which they work	113
Survey base: - Length of time in role	114
Survey base:- Type of organisation they worked for	114

### Career Profiles:

Climate Change Policy Officer	21
Senior Conservation Architect	26
Project Manager: Renewable Energy International Projects	31
Project Manager	36
Environmental Fisheries Extension Officer	41
Noise Acoustic Engineer	45
Co-ordinating Solicitor	50
Program Manager	53
Emissions Auditor	57
National Park Records Manager	61
Media Manager	69
Environmental Planner	73
Head of Sustainability	77
Senior Environmental Consultant: Waste Management	81
Project Engineer Stormwater	86

## Chapter One: Why Have a Guide?...

Years ago, the environmental industry was easy to describe and define. As the 'environment' has moved into all aspects of business and society, the industry has grown. As it's grown, the more difficult it has become to describe, to map and to track. This is a drawback when providing career advice but of great benefit for career development and fulfilment. The industry's diversity makes it difficult to track all the career opportunities out there, just as it is seemingly impossible to measure the size of the industry in terms of number of positions or turnover. But the breadth of career opportunities is what makes it a great career choice. The opportunities are immense and constantly evolving, so much so, that there really is a job in the environmental industry for everyone, regardless of your experience, skill, interest and knowledge. All you need to do is work out the best place to start.

**This is where this guide steps in to assist you in thinking about your role in the environment profession, and how to find the job you want.**

In 2004, RMIT University and the Environmental Jobs Network published the '*Guide to Environmental Careers in Australia 2004*', following a piece of in depth research that examined the types of environmental jobs within Australia. It was the first piece of research of its kind and filled a massive gap in the understanding of environmental employment and career opportunities in Australia at that time. Five years on, the environmental industry has grown rapidly, and with good reason. Intensifying environmental issues, developing policy areas and larger environmental budgets have created a wave of new environmental roles, now often termed as green jobs, or collectively known as the green collar workforce. Whole new sectors within the environmental industry have been created, existing sectors have grown and matured, and environmental roles have been created in completely different industries altogether.

This guide has been written to update the first edition, to take into consideration this growth and development. It's been written following a research project undertaken by RMIT University and the Environmental Jobs Network in 2009 which aimed to document the range of professional environmental jobs across Australia and identify the types of skills associated with these jobs. It identified the types of jobs that are now included in the broad category of green collar jobs, the skills, education and experience required to secure these roles (specifically detailed information on the generic and environmental specific skills) and identified the main tasks undertaken in the range of roles that now exist. The research also looked at the significant changes within the sector since 2004, and the potential future trends of employment within the environment industry in the next few years. The research involved three separate pieces of work, that collected data from 432 environmental professionals and 4 environmental recruitment consultants. The information collated in the surveys has been used to write this guide and career outline interviews over the telephone have been used to develop the career profiles.

This *Guide to Environmental Careers in Australia 2010*' is split into four main sections. The section titled **The Environmental Industry** provides a history of the industry, an outline of the current issues in identifying and measuring it, a summary of recent reports and research into green collar workers, and the personnel challenges and opportunities it faces in the future.

**The Careers** section details information gathered from the main survey, it outlines several career pathways and proposes a structure in which to look at and research the industry further. This section also includes information about the different sectors within the industry, and provides general information about job titles, common activities, education and skill requirements, sector openings, top tips and The sector's future. Through out this section career profiles are featured.

**The Career Advice**, contains information collated from the research with both professionals and recruitment specialists. It emphasises the importance and provides advice on; knowing the sector you want to enter; knowing the roles that interest, and are open, to you; knowing and selling yourself. It also

contains practical advice on how to apply for roles, and outlines the general and education considerations when securing employment within the industry.

***The Rational and Research*** provides further information about the project, why it was undertaken and how the research was completed.

RMIT University and the Environmental Jobs Network are proud to present '***The Guide to Environmental Careers in Australia 2010***', and are sure that it will become a central career-advice resource for all who are looking to enter the green collar workforce.

## Chapter Two: The Environmental Industry...

So what is the environmental industry exactly? This is a legitimate question, but one that doesn't really have a precise answer. Years ago, the environmental industry was easy to describe. But as it has grown, what was once black and white, is now grey. What was once a stand alone industry is now becoming integrated with others. As environmental employment is absorbed more and more into the mainstream, the more complex and harder to define it becomes.

The environmental industry is moving along its own path, just like your career. It changes as opportunities and challenges appear. It's a path well trodden, previously walked by the Information Technology (IT) and the Occupational Health and Safety (OH&S) professions. IT started out as a stand alone specialist industry, with IT companies providing IT products and services. It still does, however as the advantages and potential of IT advanced, the industry grew and developed and integrated. IT departments and IT specialists became common amongst large organisations and then in medium to small organisations. More companies and organisations invested in IT and today, all of us use, and even rely on, IT as part of our daily work and family life. Just as IT is now a standard tool in many jobs, environmental management and awareness will be integrated into the daily work practices of employers and employees.

This move has already started with the environmental industry. The environmental industry was once a clear industry (conservation, waste management and pollution prevention and control). But now it has integrated into other industries (e.g. hospitality, finance) whose activities run along side a number of sectors that constitute the core environmental industry, such as conservation, waste management and pollution prevention and control and water conservation. This core continues to grow itself, with new sectors, such as climate change and carbon trading, setting up as our understanding of environmental issues develop. Today, we are a long way from the position where the environment is fully integrated into every industry and role. But the environmental industry is still a relatively young industry which is rapidly developing, so it's only a matter of time before this is the case.

On top of this integration, is subjectivity. As with environmental consciousness, environmental actions and behaviour change, there is a spectrum of involvement, with deep green at one end of the spectrum and light green at the other. What constitutes an environmental job to one person may be a very different case to another, as we all value environmental aspects (eg species protection, efficient use of resources, unpolluted water or air) differently. This influences how we interpret what is important and what we need to work on. So it's all down to personal beliefs, ethics and preference.

So, this section, does not aim to describe what constitutes the environmental industry or what an environmental job is. Rather it aims to provide you with:

- some historical background information about the industry,
- a summary of reports and opinions on green collar careers,
- an outline of the challenges and opportunities it faces in terms of personnel,
- a view on where the industry could be in the next five to ten years.

### **Background**

Although interest in the environment dates back to the 1960s, it wasn't until the 1970s that environmental employment was available, with the creation of both environmental courses and jobs. Traditionally, this environmental work was associated with jobs in national parks (conservation) and within the waste management and pollution areas. This was linked to the development and passing of environmental laws. Since then, as awareness of the way humans interact with the Earth and concern about our impact has intensified, so to have the number of people working to better understand this interaction and manage the impact.

Again, this growth is linked to the development of policy and the passing of legislation, but more recently, growth has also been generated through the increase of public awareness and pressure. Today, public pressure is arguably the most important factor affecting the development and direction of the environmental industry. As the condition of the environment worsens and the issue climbs the media ladder, public awareness increases along side the pressure for solutions and the willingness to implement them. However, legislation is still needed to develop and legitimise the environmental industry and move society to a more sustainable way of working especially in terms of market and economic mechanisms. Public pressure plays a vital role in this.

In Australia, there has been interest in the development of jobs in the environment (or green) sector for almost two decades. In the 1990s it was reported that *"the environment industry is one of the fastest growing sectors of the global economy. While the world market for the pollution control and waste management sectors of the industry is expected to grow by at least five per cent per year, a much higher growth rate is forecast for South-east Asia which will provide substantial opportunities for Australian industry."* (House of Representatives Standing Committee on Environment, Recreation and the Arts 1994)

By the late 1990's, US\$400 billion per year was being spent on environmental protection and conservation worldwide, supporting thousands of jobs. (Environmental Career Organisation). The Australian environment industry activities were estimated at \$16, 705m in 1999-2000 (The Environment Industry Action Agenda EIAA DITR 2001). This report included the activities encompassing water and waste water management, river system and coastal zone management, land management, rehabilitation and remediation, air quality monitoring and control, energy efficiency and renewable energy, waste minimisation, resource recycling, waste treatment and waste disposal, cleaner production technologies, monitoring and instrumentation, research, analysis and technology and systems development.

There is limited data on current green job employment in Australia, several independent reports have been written and aim to ascertain the size of the environmental industry in terms of staff and economic value, and how fast it is growing.

The Barton Group indicated a figure between \$16 billion and \$20 billion in 2004-5 and identified growth areas as being water and wastewater, land management, remediation and rehabilitation, renewable energy and building energy efficiency and state reported export improvements.

House of Representatives Standing Committee on Environment and Heritage 2003 reported considerable development in the following areas:

- developing policy, legislation, regulation, standards and systems that aim to control and reduce pollution,
- understanding and mitigating climate change,
- managing, conserving and preserving water, wildlife and other resources,
- educating communities on waste management and water conservation,
- creating and disseminating a more sustainable way of life in corporate and civil arenas.

Annandale et al. (2004) noted that growth in green jobs has been much stronger than growth in the general business sector over the course of the last eight years.

Australian Conservation Foundation and Australian Council of Trade Unions (2008) reported 112,000 people being employed in six key green markets: renewable energy, energy efficiency, sustainable water systems, biomaterials, green buildings and waste and recycling. They stated that this figure could grow to 847,000 jobs by 2030.

Connection Research (2009) states that current estimates suggest that there are between 50,000 and 300,000 green collar workers in the Australasia region. However, it also states that it is impossible to arrive at a meaningful figure if we can not define what we are attempting to measure, eluding to the grey edged nature of the industry.



Until a definition of the environmental industry is agreed upon, as well as what is a green job, it will remain impossible to calculate a true figure for the number of workers within the industry. The Australian Bureau of Statistics currently reports figures on employment by occupation group and industry, unemployment and labour force utilisation. Due to the complex nature of the environmental industry, it does not fit neatly within this system, and isn't recorded in a meaningful way. This is further discussed in 'where to next' section.

### ***The Current Green Collar Movement***

By the mid 2000s it was recognised that the real growth for environmental employment, and the real gain for Australia, lies in integrating environmental management across all levels of industry. All jobs and businesses must take on an environmental responsibility and become 'green jobs' and 'green businesses'." (House of Representatives Standing Committee on Environment and Heritage 2003).

At around this time, and possibly as a result of the understanding for the need for the environment to be integrated into everyday life, the environmental industry focus moved from that of 'environmental' to 'sustainability'. Whilst people still referred to environmental professionals as people working within the environmental / green industry, new terms such as 'Sustainability Professionals' and 'Green Collar Workers' are increasingly being used to describe people working in environmental, sustainability or green jobs.

As with the industry itself, there had been no attempt to define what is a green collar worker. That was until 2009, when Connection Research and the Environment Institute for Australia and New Zealand published a research report entitled 'Who are the Green Collar Workers?'. This report identifies a two part definition of green collar workers as:

- managers, professionals and technicians who work in green organisations or who have green skills and responsibilities within other organisations that may not be considered green,
- services, clerical, sales and semi-skilled workers who work in green organisations. (Connection Research, 2009).

This definition hinges on a further definition of 'what is green?'. Green is used to describe environmental and/or sustainable actions. There is a wealth of research and reports defining the difference between the terms environmental and sustainability. For the purpose of this guide on careers:

- the term environmental tends to be associated directly to the environment or an environmental issue. It is therefore physical and relates to roles that directly relate to the physical environment,
- the term sustainability incorporates environmental, with other aspects of life, that of social and economic. It's about understanding the interconnections of these three and finding a balance so that we can live within the limits of what our environment provides. It is therefore more focussed on community's actions and attitudes, the social and economic systems and behaviour change processes we need to adopt to achieve a sustainable lifestyle.

To support this, and take it a step further, there are essentially three types of green collar workers:

- environmental professionals working in environmental organisations (environmental professionals working to directly improve the physical environment and the core environmental industry).
- environmental professionals working in non environmental organisations (environmental professionals working to support the environment and/or sustainability performance of the non environmental industry).
- non environmental professionals working in environmental organisations (non environmental professionals working to indirectly improve the physical environment, the core environmental industry or working to advance sustainability).

## *In Times of Economic Crisis*

The environmental industry is an integral part of the broader economy and has been affected by the economic crisis, as with most other industries. The Global Economic Crisis of 2008 – 2009 has meant:

- major projects have been delayed or even cancelled,
- recruitment freezes and termination of contract staff within government departments,
- recruitment freezes and some redundancies within the corporate and business sectors of the industry,
- ceasing of spending or the holding of budgets for non core business activities (which the environment falls into for many companies),
- ceasing of opportunistic hiring of environmental professionals.

However, with the crisis have come some positive impacts. It has:

- forced industry in general to rethink how they operate and reassess their values.
- brought sustainability to the forefront of discussion and debate in industry in general.
- shown the speed in which the environmental industry has bounced back in comparison to others. It's already recruiting again and becoming more active than other industries.
- shown the extent of the skills shortage. Even though there was a lack of new job opportunities, there was no increase in the right level or type of potential employees. This skills shortage is likely to continue for some time.

For more detailed information on how the economic crisis has affected specific sectors in the environmental industry, please refer to the specific sector in 'The Careers' section.

## *Personnel Challenges and Opportunities*

If we as a society are going to implement actions and changes that ensure current and future environmental issues are met, managed and even mitigated, then the environmental industry needs to continue to grow significantly. This is reliant on the industry being able to recruit and retain professionals with excellent and relevant experience and skills. The research found that the **key challenges** in enabling the environmental industry to achieve that are:

- a disconnect between available employees and those who organisations need to hire. At the end of the 2000s, a lack of expertise in many sectors means that Australia will have to import expertise for the foreseeable future,
- due to the rapid change in environmental understanding and technological development, a lot of people who have worked in the industry for many years and who are seen as experts, are often out of date. These professionals need to update their skills and knowledge to ensure continuing effectiveness. Organisations need to have the resources to enable this skill development,
- an increasing number of professionals coming into the industry have moved from non environmental positions (career changers). It is important for these professionals to update their skills and knowledge to maximise their effectiveness in their role and ensure continued employability,
- environmental education is struggling to keep up as environmental issues intensify, technology progresses and legislation keeps changing. What is studied in a course is often, by the time of graduation, out of date,
- many organisations know they need to include environmental practices into their business, but don't understand what or how they can do it and, therefore, what personnel they need to hire.

The skills, knowledge and employability of professionals are an integral part of the industry's future. **Key opportunities** for the environmental industry are:

- it is the industry of the future and is attracting a lot of very skilled and experienced people to it,
- new jobs are being created that have never existed before, so it is an exciting time,

- it provides great career opportunities. The industry is now so vast and diverse that you can move and develop your career whilst remaining within it. In addition, the implementation of emerging ideas and technologies provide further career progression and professional development opportunities,
- the need for more in depth research and planning on human capital requirements for new environmental markets, technologies and services,
- more investment in longer term training and development (both academic and professional) for people already working in the industry. Creating more partnerships between academia (university / TAFE / further education institutions) and industry to achieve this.

## Where to Next

So what does the future hold for the environmental industry? Many predict the demise of the environmental industry as a discrete industry, due to the process of mainstreaming environmental positions. This may be true, but it's a long way in the future. The short to medium term steps in the development of environmental professionals is three-fold:

- continued growth in other industries - 'greening mainstream employment',
- growing the skill base - 'building capacity of the environmental industry',
- measuring the environmental industry.

The environmental industry will move further along the pathway of integration with environment employment opportunities growing in key industries. Existing professionals in those industries will also be trained in sustainability practices. As professionals they will need to provide up to date and full product and service options, necessitating the incorporation of environmental knowledge into their business area.

The main driving factors for this growth will be:

- increased awareness will increase consumer and community pressure,
- implementation of tighter environmental regulation,
- rollout of new Government economic incentives and packages,
- improvement of business positions on environmental competitiveness and compliance,
- developments in technology.

All of these are components of behaviour change, none of which will work in isolation.

Public pressure and legislation are influenced by key environmental issues. In the near to medium future the three main sustainability issues for Australia have been identified as population, water security and climate change. To support this several reports have predicted growth in certain industries:

Greenpeace and European Renewable Energy Council undertook modelling of what they termed an 'Energy [R]evolution Scenario' that predicts 16% cuts in electricity consumption by 2020 through energy efficiency, coal power phased out by 2030, and a 40% increase of renewable energy by 2020 providing a net gain of between 33,700 and 57,500 jobs in the renewable energy sector.' (Teske and Vincent 2008).

CSIRO and Dusseldorp Skills Forum modelling predict that 230,000 to 340,000 new jobs will be created through more sustainable practices. These jobs will be created in the transport, construction, agriculture, manufacturing and mining sectors (Hatfield-Dodds et al 2008).

According to the Victorian State Government's Climate Change Green Paper, green job opportunities will increase in the following areas: 'Green buildings and urban design, water efficiency and water markets, lower emissions technology and renewable energy and development of the Australian carbon market'. Green job opportunities will also arise from the 'design and construction (in relation to energy and water efficient buildings and infrastructure, renovations and retrofits, and the installation and maintenance of efficient appliances and machinery), restructuring of the energy system and the introduction of

renewable energy, developing alternative transport systems and changing the ways in which food is produced' (Victorian Government 2009).

Allen Consulting Group claims, in a report to the Victorian Department of Innovation, Industry and Regional Development, there is a 'core set' of 'climate winning' industries that will benefit from increased carbon regulation. These include gas; forestry (i.e. carbon sink enhancement); energy efficiency; sequestration technologies; renewable energy; and crops due to shifts in relative costs and biofuel opportunities' (Allen Consulting 2009).

The growth in skills base is really about evolving the existing skill base to ensure that we as a nation have the right skilled people to undertake the roles that need to be done. The environmental industry is moving fast, issues have intensified, new technologies have emerged, laws are changing. The result of this is that many highly regarded and skilled professionals in the sector are in fact out of date on what the issues and options are. There is a need to invest in skill and knowledge development of environmental professionals, especially in the fast moving industries and those closely linked with big issues such as climate change (energy efficiency and renewable energy, climate change and carbon trading, green building and design).

Additionally, to support the growth in other industries, there is an even bigger need to develop the skills of other professionals to include sustainability into their working practices. CSIRO's research for Dusseldorp Skills Forum lists the following jobs as important for the green economy: 'planning and design; business leadership and entrepreneurship; project management and procurement; specific business management expertise (such as for architectural practice, broad acre farming, fleet management, specialist manufacturing or retail); trade skills (such as green plumbing, construction of energy efficient buildings, renewable energy, low input gardening); assessment of project requirements (such as specification of inputs, system specifications, access to finance, approvals requirements, total costs) and outcomes (such as water and energy use, efficiency, market value); marketing and communication' (Hatfield-Dodds et al 2008). Industry Skills Councils (ISCs) 'Environmental sustainability – An Industry Response' (2009) report claims there will be emerging opportunities in emissions monitoring, auditing and reporting skills, design and development, risk management and environmental market research roles.

The growth in skills base is therefore closely linked to the other two areas of development. Sustainability skills need to be increased and improved in environmental and non environmental professionals working in the environment, and several other priority industries (manufacturing and construction for example) and they need to be increased to a level that allows us to meet our needs, that of achieving environmental targets and policies and being able to implement and enforce environmental standards and legislation.

The need to measure the environmental industry in Australia is three-fold. We need to:

- capture our national skill set as baseline data to understand what we need to do to ensure we have the right professionals to enable the transition into a low carbon economy,
- use this baseline data to measure growth and value of the industry,
- compare the industry to others in terms of growth, skills, value.

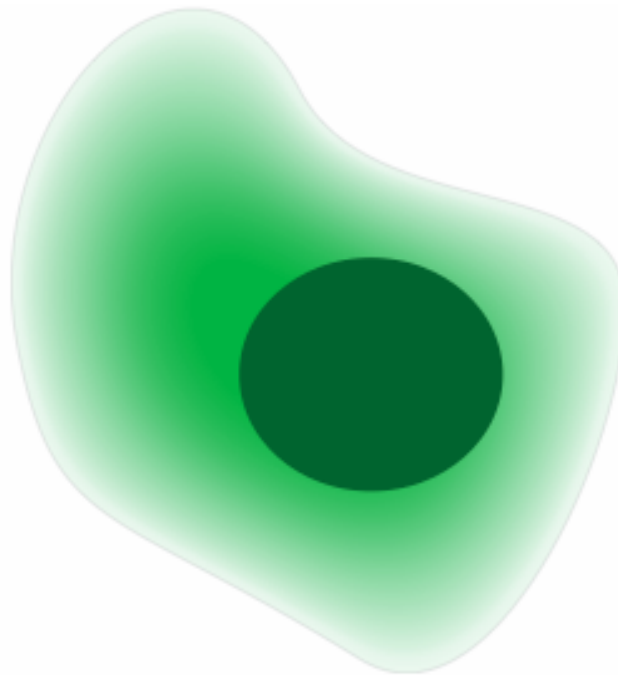
A recent report by Connection Research in conjunction with the Environment Institute of Australia and New Zealand (EIANZ) supported by the Department of Environment and Climate Change NSW suggests a Green Collar Worker Coding System (Connection Research, 2009). The report proposes that green collar jobs in Australasia be designated a simple four character code, with each character describing one of the four attributes of the job:

- environmental or sustainable,
- occupation,
- skills level,
- industry.



This system allows any green collar job to be coded and base line data to be gathered in order to understand the skills base Australia has and therefore, what it will need to do to respond to climate change, water scarcity as well as the need to repair environmental damage and offer environmental goods and services. It also means that all job descriptions will accord largely with standard Australian Bureau of Statistics industry, occupational and skills classifications (the last three characters). This will ensure that green collar workers that make up the environmental industry will be accounted for in official statistical data used by all Government and most industry policy-makers.

**Final thought....** The environment industry is like an egg. It has a yolk, that represents the core environmental industry which includes organisations like environmental not for profits and environmental consultancies with personnel with roles of water conservation officer, environmental campaign manager. It then has a white which represents parts of the environmental industry that is spreading and integrating into other areas of business and society.



So consider your skills, knowledge, interest and current position. Do you have environmental skills and knowledge? How deep is your interest in the environment? Do you want to work in an environmental role or organisation? Or help other organisations to become more environmentally sensitive? These simple questions can help shape your thoughts and identify potential entry points into the sector, be that the core or the supporting and integrating part of the industry.

## Chapter Three: The Careers...

### Introduction

Understanding of employment in the environmental profession, although improving in terms of extent of information, has not reached a consensus of what is an environmental job. This stems from the employment base being broad and diverse, and no consistency in what constitutes the environmental industry. Federal Government, statistical organisations and subsequent reports all refer to different elements of society and business as being environmental. The report by Connection Research in conjunction with the Environment Institute of Australia and New Zealand (EIANZ) has taken the first step to overcome this problem. For further information about this issue, please refer to the previous section, The Environmental Industry.

For the purpose of this guide, an environmental job or career is one whose main focus, or the organisation they work for, is to reduce environmental pollution and degradation and change the way we live to restore ecological balance and achieve sustainability. This means that they can:

- work for a government / private enterprise / not for profit / higher education (academia) / own business,
- be an environmental professional working in an environmental organisation / environmental professional working in a non environmental organisation / non environmental professional working in an environmental organisation,
- have a direct or indirect connection to the environment or environmental sustainability issues.

There is a myriad of job and career opportunities and this chapter aims to provide you with a framework in which to explore the industry, the sectors within it and provide some basic information and considerations to get you started in this exploration. It has three sections. The first, “**Careers in different sectors**” is the main part of this guide and goes through each of the identified sectors within the environmental industry and details information about job titles, main activities of roles, education and skill requirements, job openings, tips from professionals and discusses the sectors future.

This is followed by “**The Environmental Career Matrix**” section which proposes a framework in which to look at and dissect the environmental industry for the identification of career opportunities. Based on the idea that people generally come at their careers from three different angles, the matrix can be used as a tool to identify key sectors, job types and organisations (or a combination of two or all three) that you can and would like to work for. The matrix is supported by the ‘**Career Pathways**’ section, which demonstrates how the breadth of the sector means that there are a number of different ways to reach the same goal.

### Careers in the different sectors

The environmental industry has a number of sectors within it. The framework for sector classification of environmental employment that has been developed for this guide is based on a practical rather than a theoretical approach. It is based on job categorising information gathered from several Australian environmental job sites as well as group exercises undertaken in career workshops that have been run by the Environmental Jobs Network. The framework for classification of environmental employment in this guide is as follows:

- **Air quality and protection**
- **Conservation and management of biodiversity**
- **Climate change and carbon trading**
- **Energy efficiency and renewable energy**
- **Environmental consultancy**
- **Environmental education and training**
- **Environmental impact assessment**
- **Environmental sustainability policy, legislation, protection and enforcement**

- **Environmental sustainability research and development**
- **Green building design and construction**
- **Land management, quality, protection and site restoration**
- **Natural resource management**
- **Sustainability communications and public awareness**
- **Sustainable development and planning**
- **Sustainable living**
- **Waste management**
- **Water conservation**
- **Water quality and protection**

This section is broken down using this sector classification and for each sector the following information is provided:

- **Introduction to the sector.**  
This information has been collated from survey responses, government websites, career websites and the first edition of The Guide to Environmental Careers in Australia (2004). It details background information about the sector, what it does, how it has developed and identifies any patterns in distribution and growth.
- **Typical job titles.**  
This information has been collated from survey responses, environmental jobs and career websites and lists job titles you are likely to see within this sector.
- **Main activity of the roles.**  
This information has been gathered and collated from the survey responses and provides an indication of the types of activities the professional within this sector perform. It is by no means a comprehensive listing, just an indication of the breadth of tasks the listed job titles will perform on a day to day basis
- **Education and skills requirements.**  
This information has been gathered from the survey responses and provides an outline of the skills and education background of the respondents, indicating the types of skills and education needed to secure work within this sector. Please note that although the same respondents have submitted information for job title and skills requirements, it does not mean that they are directly linked. For example, if research assistant is listed in the job title section and good research skills have been identified in this section, it doesn't necessary mean that these skills are exclusively related to that job. It may refer to another role completely, such as 'educator'.
- **Openings and salary.**  
This section has been completed based on information collated in the survey and the first edition of The Guide to Environmental Careers in Australia (2004). It identifies possible entry points into the sector, indicates the types of jobs available and where. (i.e. mainly full time roles in government). It identifies the typical salary bracket amongst the respondents
- **Personal tips from the professionals.**  
This section contains information given in response to the survey question "If there is one tip you can give to someone wanting your job, what would it be?" It provides fun and imaginative ideas on how to get into the sector and work your way up.
- **The sector's future.**  
This final section contains information gathered from the survey and provides an outline of the impact the recent economic crisis has had on this sector and identifies some challenges and opportunities this sector faces in terms of personal and career development in the future.

## Air quality and protection sector

*This chapter is split into a number of sections. For a list of what these are, what they cover and where the information came from please refer to The Careers Introduction.*

The physical occurrence of air pollution comes from a number of static and mobile sources such as factories, power plants, vehicles and bushfires and can pose a threat to the health of both the environment and humans. The quality of the air we breathe is an important factor in the quality of life in both urban and rural areas. Protecting the quality of air is a challenge in Australia, as it is worldwide, providing a large range of environmental employment opportunities.

The Air Quality Section of the Australian Government Department of Environment, Water, Heritage and Arts initiates National Plans and Strategies to protect the atmosphere, and works to improve the quality of air in urban areas and to promote the recovery of the ozone layer. Continued growth of our cities will place increasing pressure on urban air quality, particularly in the case of Nitrogen Oxide, hydrocarbons and particulates. National policies relate principally to the reduction of emissions from transport, residential properties and commercial properties with the focus on improving fuel quality and reducing vehicle emissions; providing transport options that reduce pollution without impacting on access and mobility (transport); management of wood heater emissions (residential) and the monitoring and management of fine particle pollution (commercial).

State Government agencies such as the Environmental Protection Authority, monitor and control air pollution. This is achieved through both regulatory processes and voluntary programs, the former making way for employment opportunities in environmental consultancies and private industry. These create roles in a range of areas including the development of control, remediation, monitoring and prevention technology and mechanisms as well legislation and standards development.

One percent of the survey respondents worked in the air quality and protection sector. This chapter refers exclusively to this sector. A snapshot shows that 66% were aged 26 – 30 years old, 50% were male and 50% were female and 75% had worked in the sector for 5 years or more.

### **Typical job titles**

- Air Quality Section Administrator
- Air Quality Engineer
- Air Quality Officer
- Air Quality Modeller
- Air Quality Policy Officer
- Atmospheric Chemist
- Environmental Auditor
- Environmental Consultant
- Environmental Engineer
- Environmental Liaison Officer
- Environmental Manager
- Environmental Officer
- Environmental Scientist
- Meteorologist

### **Main activity of the roles**

- research and develop air pollution equipment, methods and technology
- develop government policy and legislation
- develop guidelines, standards and strategies
- implement Air Quality Strategies
- model air emissions
- monitor air pollution and emissions
- assess and analyse results and report writing
- assess emissions against environmental objectives
- assess environment impacts of projects, feedback on proposal and likely impact
- liaise with stakeholders and the community on air quality issues
- work on committees and working groups
- deal with complaints from the public and Local Government
- administration tasks running of the Air Section in the Environment Division



### ***Education and skills***

The top generic skills were identified as:

- communication – spoken
- judgement and decision making
- communication – written
- customer service
- ability to get along with others and team work
- using scientific rules and methods to solve problems
- identifying complex problems and provide solutions

The top environment specific skills were identified as:

- multidisciplinary environmental knowledge
- higher education in the environmental field
- knowledge of environmental processes and impacts
- ability to assess environmental impacts
- ability to do air modelling
- knowledge of air industry

Professionals within this sector come from both a technical and non technical background and therefore have diverse educational backgrounds. Most are educated to at least a degree level and it's fairly common to have post graduate qualifications, although not always necessary.

Technical roles will generally require a science (environmental science/physics/chemistry) or engineering degree, while non technical roles are open to a broader base of degree subjects (humanities/social science). As multidisciplinary knowledge is an important base to have, any environmental component within any of these degrees would be highly beneficial.

### ***Salary and openings***

In Australia, air quality and protection is undertaken by Federal, State and Local Government and commercial organisations such as environmental consultancies and private businesses. There is little air quality work within the not for profit sector. The Australian Government Department of the Environment, Water, Heritage and the Arts has the Air Quality Section which co-ordinates national policies and initiatives such as The National Environment Protection Measure for Ambient Air Quality (Air NEPM). Australia does not have national air quality emissions standards, these are set, enforced and monitored by environment protection authorities in individual states and territories. Environmental consultancies recruit air professionals to provide services to both industry and Government, carrying out monitoring, assessment and audit work. Opportunities in consultancies range from roles within air protection specific consultancies to more multi-disciplinary consultancies that need air quality professionals, ranging in size from 2 – 2500 employees. Some, but few, roles exist in private business that design and develop new clean air technology or monitoring technology. The salary range of the roles detailed is \$41K - \$100K.

### ***The personal touch – hear from the air quality professionals....***

To help get a role in the air quality and protection sector, find the job you'd like to do and get practical experience that will enable you to secure that job. Or, have fairly broad skills other than a scientific education, which will enable you to work in other areas and then move into the air quality area. Skills and knowledge that air quality professionals have developed and which have helped them include:

- multidisciplinary understanding of the environment
- the need for a tertiary education with an environment focus
- ability to learn knowledge and skills in new areas quickly
- broad skills in oral and written communication
- ability to manage work and tasks assigned either individually or as a team

### ***The sector's future***

The air quality and protection sector was affected by the global economic crisis, with budgets being cut in government departments in terms of jobs and projects, leading to downsizing in personnel, reduction in consultancy work and contract positions not being continued. This has caused a loss of corporate knowledge. However the sector is recovering well to date. It's often an overlooked sector within the

environmental industry and it faces the challenge of being able to hire capable persons to undertake the required roles even though the number of positions is relatively small in size compared to others.

There are increasingly more cleaner and greener ways to do business; technological advances in both cleaning air and measuring air pollution provide exciting opportunities to develop experience and knowledge. With more individuals looking to environmental careers and courses, there is an increasing number of graduates in the area. What is needed is to make more graduate positions available for them to obtain experience that will eventually help fill the job skill shortage in both this sector and the industry as a whole.

## **Climate change and carbon trading sector**

*This chapter is split into a number of sections. For a list of what these are, what they cover and where the information came from please refer to The Careers Introduction.*

A relative new sector within the environment industry, it has grown considerably in the last five years. Over the last 2 years a wealth of new carbon / climate jobs have been advertised on job websites as Governments, industry and not for profit organisations work to push for emissions policies, emissions schemes and publicity campaigns that work to reduce the amount of carbon emitted into the atmosphere. Sixty-seven percent of our respondents within this sector had been in their current climate change and carbon trading role for less than five years.

Government, corporate and not for profit organisations are undertaking projects and work that aim to get businesses and communities to reduce carbon emissions and work under a strategic framework that outlines the 5 As of climate change: Abatement, Accounting, Adaptation, Advocacy and Awareness.

Within government, there is a lot of activity in this sector at all levels, federal, state and local. The Australian Government Department of Climate Change was set up in December 2007 and plans to deliver the Australian Government's Climate Change Framework based on three pillars of activity:

- reducing Australia's greenhouse gas emissions
- adapting to the impacts of climate change that cannot be avoided
- helping to shape a global solution.

It is also responsible for developing domestic policy in relation to reducing Australia's greenhouse emissions by implementing a comprehensive emissions trading scheme by 2010 (Carbon Pollution Reduction Scheme – CPRS); by achieving the target of 20 per cent renewable energy in Australia's electricity generation by 2020, and developing measures that will assist and support the introduction of the CPRS and address market failures. All states now have a climate change office or section within their environment departments and work with local government in systematically dealing with the impacts of climate change at corporate and community level.

Many not for profit organisations have climate change projects which concentrate on a number of different areas, such as campaigning, policy development, community and business awareness raising and action. Some are involved in outreach work to physically support and provide specialist advice to business and communities on ways to reduce their impact on the climate.

Several private business and environmental business are also heavily involved in this work, providing assessment, auditing and advice on reducing energy use and emissions as well as energy credits and emission trading potential.

There is a fine line with regards to roles within the climate change and carbon trading and roles within the energy efficiency and renewable energy sector. For this guide, and in terms of job opportunities and career paths, jobs that relate to reducing the amount of carbon emitted into the atmosphere, that aren't directly related to the development and roll out of renewable energy or improved energy efficiency are classified in the climate change and carbon trading sector. Other roles related directly to the

development of clean / new energy technologies and rollout of energy efficient infrastructure projects can be found in the energy and energy efficiency sector.

Three percent of the survey respondents worked in climate change and carbon trading sector. This chapter refers exclusively to this sector. A snapshot shows that 42% are aged 41 years and over, that 50% are male and 50% are female, 42% have been in the industry 3 – 5 years and 51% have been in the industry for 5 years or more.

### **Typical job titles**

Carbon Emissions Auditor	Climate Change Manager
Carbon Trading Officer	Climate Change Policy Officer
Climate Change Campaigner	Climate Change Project Manager
Climate Change Consultant	Climatologist
Climate Change Director	Environment and Climate Change Project Officer
Climate Change Engineer	

### **Main activity of the roles**

- business management and administration (budgets, personnel etc.)
- calculate and report on greenhouse gas emissions for businesses
- develop methods and tools for climate change risk assessment
- calculate climate risks and provide advice on strategic climate change planning and implementation
- develop mitigation plans
- carbon accounting and footprinting
- client management
- complete legal agreements
- conduct inventories, energy audits and staff engagement sessions
- develop, co-ordinate and implement projects
- develop climate change and environment policy and provide policy advice
- facilitate workshops and plan meetings with clients
- GIS mapping and administration
- give presentations and talks to businesses and communities about climate change
- inform on climate change policy issues
- management of client relationships and project partnerships
- moderate internet forum and publish newsletters
- organise events for businesses
- prepare reports on environmental economic issues
- project planning, communication and management
- relay scientific information to clients and provide advice on climate and environment
- review / analyse economic documents
- stakeholder engagement

### **Education and skills**

The top generic skills were identified as

- communication – written
- critical thinking
- identifying complex problems and provide solutions
- communication - spoken/verbal

The top environment specific skills were identified as

- knowledge of carbon reporting and accounting
- knowledge of climate change (environmental) economics
- knowledge of climate change policy formulation
- knowledge of climate change science
- ability to do Life Cycle Assessments
- ability to do energy efficiency measurement and audit
- ability to do risk and vulnerability assessments

- knowledge of energy issues, the latest in energy efficiency and renewable energy technologies
- environmental auditing
- corporate sustainability knowledge
- environmental planning and implementation of plans

The focus and level of qualifications necessary for a career within this sector is diverse, but a graduate education is highly regarded. Eighty-four percent of respondents said that education was fundamental to their role, with 45% having an environmental science education. Basic science and humanities (environmental studies / geography) provide a good basis. Gaining an initial broad environmental qualification was suggested, then gaining a deeper understanding of the climate change science, statistics, economics and accounting models, as well as the management of greenhouse gases, through further education would be very beneficial. Several universities are now providing carbon trading and climate change specific courses.

Post graduate qualifications seem to be important for career development but not for entry into the sector. Of our respondents in this sector, 64% of them were educated to a post graduate level, achieving Masters degrees and PhDs in environmental science, human geography and environmental management.

### ***Salary and openings***

The Australian Government department responsible for the climate change portfolio is the Department of Climate Change, which works with the states and territories to achieve national consistency in measures, targets, reporting and programs.

Within urban areas there is a lot of climate change action at the local government level, with officers implementing both community and business focused projects that encourage their involvement in carbon emission reduction as well as a number of other environmental actions (water conservation and waste management).

As climate change policy and regulation has been developed, roles within the not for profit sector, consultancies and private businesses have been created. The range of roles is increasing week by week, and includes climate policy development, the delivery of (user focused) energy conservation / carbon cutting projects and programs, public awareness raising and education. As emission auditing and trading comes to the fore, the number of climate change and carbon trading roles within corporates and businesses will grow considerably.

All respondents were employees of an organisation, with none of them being employed on a volunteer, casual, contractor or consultant basis. Respondents worked for government, not for profit organisations, businesses or had their own business. Common employers of those surveyed included government organisations such as EPA Victoria, Department of Environment and Climate Change and Water (NSW), Department of the Environment, Climate Change, Energy and Water (ACT). Other Government roles can be found in local government and associations, such as Hobart City Council, Local Government Association of Tasmania, Local Government and Shires Associations of NSW. Businesses, such as Carbon Planet, Beyond Neutral Pty Ltd and not for profit organisations, such as WWF, Australian Conservation Foundation and the Carbon Reduction Institute.

The salary range of the climate change and carbon trading professionals was \$51K – \$75K (73%) and \$76K - \$100K (27%).

### ***The personal touch – hear from the climate change and carbon trading professionals....***

To work in this sector you need a genuine commitment to the environment and understand the climate change issue and sector. Further, a good understanding of how businesses operate and make decisions and the complexity of local government is also advantageous. Skills and actions which helped the respondents secure work within this sector included:

- volunteering in climate change / carbon trading area to get contacts and experience
- learning the relevant carbon mitigation standards and legislation
- being flexible in where you start



- having strong networks

### ***The sector's future***

The Climate Change and Carbon Trading Sector has been affected by the economic downturn. There has been a reduction in budgets and money available to roll out projects and initiatives, and clients holding off on or stopping audit work. However, with increased attention in the mass media, the impact of the downturn has been slight, with activity in this area and demand for carbon focused positions increasing rapidly.

The sector needs favourable policy to create action within businesses. Many business are holding off on making changes as they wait to see what will happen with the governments CPRS. Other challenges include the sectors high profile and scale of the issue. It's high profile is making it a popular entry point for many wanting to do an environmental job because they are interested in and concerned about the climate area. Unfortunately interest alone isn't a sufficient requirement. Further growth is needed with skill and education development. The lack of clarity around the government's role at state and federal level, due to the scale of the issue and action required, is having an impact on the location and types of roles available and the professionals available to fill them.

But this sector has plenty of opportunities. Climate change and carbon reductions is being discussed more in the general public and media, so there is a lot more awareness. Government, industry and communities are starting to move and all recognise that certified environmental professionals are needed to help make the changes needed. There could be huge levels of engagement in carbon reduction due to its ability to be a self funding activity (money invested against money saved).

## **Career Profile Climate Change Policy Officer Local Government Association – Not for Profit**

**Salary bracket:** \$75 – \$100 K

**Employment Conditions:** Currently two days per week at the Association and two days per week at university.

### **What was your initial motivation for undertaking environmental work:**

I have been involved in environmental actions since I was a teenager in the 1970s. I was active with *Project Jonah* an organisation in Melbourne established to save whales. My first undergraduate degree was a Bachelor of Social Science (1986 - 1989), Socio - environmental Assessment and Policy at the Royal Melbourne Institute of Technology and then went on to do post grad in environmental planning at the University of Melbourne and Southern Ocean and Antarctic Studies at the University of Tasmania. I've always had an interest in the environment.

### **What was your first role in the industry:**

My first job was at the Museum of Victoria in Invertebrate Zoology.

### **Outline your career path since then:**

I moved to Tasmania and worked on introduced marine pests, finding my way into Natural Resource Management. I have had various policy and project positions with local, state and the Federal Government and worked as a consultant internationally and in Tasmania. I have worked as the State Coastcare Project Officer for state government, a Project Manager for the Natural Heritage Trust and State and local government developing and implementing coastal management and natural resource management strategies and policies. Most of my positions have been coastal / ocean / natural resource management focused.

### **What are the main activities of your role:**

I hold responsibilities for the co-ordination and delivery of federal and state climate change initiatives and programs to twenty nine Councils. My role is really about connecting people working in the climate change area, capacity building and education of councils, both elected members and council officers..

### **What generic skills do you think are essential for working in this role:**

Communication (written and verbal), organisational, facilitation, negotiation and networking.

### **How much of what you know have you picked up on the job:**

Probably about 70%- 80%

### **What are the most interesting aspects of the position:**

Working with councils and its communities. It is incredible how diverse the work that councils do is and how important they are. So much of what we take for granted is actually provided through local government. There are over 140 different policy areas covered by local government (its not all about rates and rubbish). Local government is the single most important sphere of government.

**What hours do you work and how do you manage your workload:**

The workload can be as big as you make it. It's challenging to manage all that needs to be completed in two days a week. (Funding cuts reduced my days from 4 to 2 with little change in workload). Local government is notoriously under-resourced but we could always do better with the resources we have.

**What do you gain personally from the job:**

It's exciting, challenging and very occasionally rewarding. The network and friendships that have been made are great

**What advice do you give to someone wanting to pursue your career:**

Never underestimate the job and always make time for people. It's a hard area to work in, keeping everyone happy and delivering what everyone wants or thinks they want. And don't take anything personally.

## Conservation and management of biodiversity and heritage sector

*This chapter is split into a number of sections. For a list of what these are, what they cover and where the information came from please refer to The Careers Introduction.*

What is generally seen as the traditional area within the environmental industry, this sector deals with the preservation and conservation of Australia's diverse habitats, biodiversity and ecosystems, focusing on the biological or ecological elements of the environment. It's one of the mature sectors within the industry, with 74% of respondents who worked in this sector having worked in the environmental industry for 5 years or more.

Like most sectors, the conservation and management of biodiversity sector has grown out of the passing of legislation, creating protected areas and species. Australia's network of protected areas, conserves our natural landscapes and seascapes, native plants and animals for future generations, and includes more than 9,000 protected areas, covering over 89 million hectares, equating to more than 11 % of the country. It is made up federal, state and territory reserves, indigenous lands and protected areas run by non-profit conservation organisations, through to ecosystems protected by farmers on their private working properties. In recent years, the conservation of biodiversity has expanded to include the conservation of culture and built heritage, commonly known as heritage.

The sector is predominately made up of government and not for profit organisations who work to conserve and manage nature and heritage on micro and macro scales. Since the last edition of this guide in 2004, there have been strategic developments which have created regional and landscape scale conservation plans, combining the efforts of a number of organisations. Some roles work strategically in conserving sweeping landscapes, whilst others can concentrate on certain habitats, specific protected areas and even individual species.

Organisations within this sector employ a wide variety of environmental professionals to undertake a wide variety of jobs on both private and public land. It involves both proactive work, such as management and development of habitats, coastal management, and doing field work to assess quality of habitat. It also involves reactive work, such as threatened species management, wildlife response and rescue and fire management. Working in this sector can also involve the assessment of land for biodiversity value and assessment of building development. A key element of any role within this sector is community engagement and the management of conservation volunteers, both of which are heavily relied upon for support.

Eighteen percent of the survey respondents worked in Conservation and Management of Biodiversity Sector. This chapter refers exclusively to this sector. A snapshot of who they are reveals that 32% are aged over 41 years and 59% are female. The vast majority (79%) classify themselves as being an environmental professional working in an environmental organisation.

**Typical job titles**

Biodiversity Project Coordinator  
Coastal Scientific Officer  
Conservation Officer  
Conservation Policy Officer

Curator of Botany  
Ecologist, Threatened Flora  
Environmental Manager  
Environmental Officer

Environmental Planner  
Environmental Scientist  
Field Technician  
Habitat Restoration Ecologist  
Park Ranger  
Programs Manager  
Rangelands Monitoring Officer  
Ranger  
Regenerator

Research Scientist  
Scientific Project Officer  
Senior Conservation Architect  
Senior Park Ranger  
Senior Wildlife Ranger  
Technical Advisor  
Threatened Species Recovery Project Officer  
Volunteer Engagement Officer  
Weed Officer

### ***Main activity of the roles***

- write management plans for national park resources and systems
- undertake research to develop wildlife management policy and plans and provide wildlife management advice
- conduct biodiversity assessment and environmental research
- collate and analyse park visitation data and co-coordinating counter calibration surveys
- comment on, develop, and communicate on conservation policy
- provide conservation advice and planning
- conservation program development
- community education and facilitating community engagement
- talk to and advise visitors
- write reports and fact sheets
- advise on land management techniques
- investigate and provide professional advice and recommendations on development applications
- prepare briefings, reports and responses on nature conservation matters
- strategic planning for park and future environmental conservation activities
- budget management, source and apply for funding
- business and product planning
- plan, implement and manage projects (pest plant / re-vegetation etc)
- research and quantify carbon footprint
- create maps with GIS
- design and conduct experiments
- monitor and manage threatened flora populations
- cultivate plants and develop standards for vegetation survey and mapping (field, database etc)
- pest plant and weed management
- equipment maintenance and operation
- fire management and wildlife rescue
- liaise with heritage groups, other environmental experts, land owners, volunteers and contractors
- manage on site safety issues
- manage and supervise staff, volunteers and contractors
- advertise for and recruit volunteers and staff

### ***Education and skills***

The Education and skills requirements of professionals within this sector are varied and dependant on whether the role is working directly within the environment or is of a management or policy nature.

However, the top generic skills were identified as:

- communication skills – spoken and written
- team co-ordination
- ability to get along with others
- critical thinking
- judgement and decision making

The top environmental specific skills were identified as:

- biodiversity conservation skills including field survey techniques, laboratory work, and data analysis
- botanical knowledge and experience including plant identification
- environmental management skills and practical conservation techniques (i.e. re-vegetation)

- computer programming (e.g. Matlab, R, SQL, Visual Basic, Python)
- ecosystem knowledge and ecological modeling skills
- environmental interpretation skills
- GIS mapping knowledge and management
- knowledge of animal welfare, ecology
- in-depth environmental conservation legislation knowledge
- fire ecology and knowledge
- ability to work with various power tools
- ability to convey scientific knowledge and technical information into a number of different forms for a variety of audiences
- experience in the implementation of conservation management plans (e.g. invasive species, wildlife population, regeneration, threatened species recovery)
- project and partnership management skills in the environmental sector
- experience in field based environmental impact assessment

Practitioners enter this sector through gaining tertiary qualifications, with 82% of respondents having an environmentally focused qualification. Bachelor degrees in ecology, natural resource management and environmental management are the typical qualifications at undergraduate level. Courses that provide a broad based knowledge and good field work skills are preferred. As a result a number of TAFE courses in conservation and land management are also highly regarded. Just over a third of the respondents were educated at a post graduate level, the most common subject being community ecology, plant ecology and environmental management.

Practical skills are essential in obtaining employment in this sector. So courses that offer the ability to get a variety of hands on experiences were preferred by many. Skills that could prove beneficial for the outdoor type roles within this sector would include mapping, operation and maintenance of power tools, plant machinery and vehicles, handling of chemicals and outdoor skills (i.e. climbing). So practical qualifications such as outdoor guiding, first aid, arbor certificates, Occupational Health and Safety, are also very advantageous.

Experience in people skills is also advantageous as many roles have a customer service or community engagement element to them. So combining environmental focused courses with experience or studies in public relations, education, interpretation, customer service, communication and planning is very desirable.

Undertaking voluntary and casual work as a way to underpin the knowledge gained whilst studying is constantly identified as essential. Not only is this a way to acquire and develop essential field skills, but can provide contacts within the industry, identify potential employers and provides you with the opportunity to show your abilities.

### ***Salary and openings***

Typically, due to the amount of experience and knowledge needed, the maturity of employees and the longevity within roles, there are few entry level opportunities within the conservation sector. An environmental qualification (see above), broad skills base and practical experience (be that paid or voluntary) are essential. Seventy one percent our respondents stated that they felt that an environmental qualification was key in securing their existing role, and 45% thought specific environmental experience was key.

The majority of the opportunities within the conservation and management of biodiversity and heritage sector are within the public sector, the rest are largely within not for profit organisations. However there are a few small conservation businesses that offer specialist services, mainly in revegetation.

The Australian Government Department of the Environment, Water, Heritage and the Arts, through The Director of National Parks manages the National Strategy for the Conservation of Australia's Biological Diversity, including the national reserve system, national parks and botanical gardens, alpine national parks and commonwealth park and reserve permits. Environmental professionals are hired to carry out



the daily management operations of national and marine parks and botanical gardens. At a State and Territory level, Park Authorities (parks and wildlife service) act as custodians to these protected areas and other recreational parks and reserves. Not all roles within this sector are outdoors, with headquarter offices and regional visitor centres requiring a wide variety of staff to undertake many roles.

Of the survey respondents, 19% worked for not for profit environmental organisations who are dedicated to the protection and conservation of wildlife of Australian ecosystems through the implementation of protected areas and community planting projects. Collectively, the larger environmental organisations (Bush Heritage Trust, Birds Australia, Australian Wildlife Conservancy), own and administer more than one million hectares.

As mentioned, few small businesses exist providing very specialist advice and guidance to governments and environmental consultancies. These organisations work predominately with land rehabilitation projects and therefore specialise in native plant species propagation and revegetation.

Common employers of those surveyed included government organisations such as the Department for Environment and Heritage, Department for Environment and Heritage SA, Department for Environment, Climate Change and Water, Department of Environment and Conservation, Department Natural Resources, Environment, the Arts and Sport Northern Territory, Northern Territory Parks and Wildlife Service, EPA Victoria, Parks Victoria, regional natural resource management bodies and local governments (local biodiversity section). Not for profit organisations included Bush Heritage Australia and Conservation Volunteers Australia.

Working arrangements were more flexible in this sector than any other. Seventy two percent worked full time whilst 16% worked part time. In addition to this there were several casual and contractual arrangements. This is one of the lowest paid sectors within the environmental industry; the most common salary bracket for professionals working in this sector was \$51k - \$75k (51%).

### ***The personal touch – hear from the conservations, biodiversity and heritage professionals....***

To work in this sector you need a genuine commitment to conservation and have practical experience. Most have gained experience and their entry into the sector through volunteering. Volunteering enabled them to gain knowledge of the organisation, develop suitable networks, spend time in the field, talk to experienced, knowledgeable professionals, and see how to communicate with a variety of stakeholders. Other considerations include who to work for (government, NGO or industry) as the goals and values and experienced gained in each is very different, as is the salary. Securing other types of work experience before entering a government position, can vastly broaden your opportunities from there. Skills and actions which helped the respondents secure work within this sector included:

- communication and networking skills
- knowledge of organisation
- having a range of different experiences and being able to multi-task and prioritise
- computer programming and data analysis skills (opens up many new opportunities)
- obtain technical skills by helping friends or family with building, renovations, car maintenance
- having certifications / tickets i.e. chemical certificate, chainsaw, red card, first aid, driver's license.
- being able to recognise big picture opportunities
- becoming familiar with engagement techniques as environmental management is about people first
- emphasising your transferable and project management skills
- being open to challenges and learning from change
- being aware of unique challenges you'll face working in remote areas
- gaining experience in writing grant applications. And consequently, because funding bodies are placing increasing emphasis on these, having knowledge and skills in monitoring and evaluation

### ***The sector's future***

The conservation and management of biodiversity and heritage sector has been effected by the recent economic crisis, mainly through budget cuts which have resulted in projects ceasing and the termination of contract and permanent staff. But this sector is used to operating with low and fluctuating budgets,

and is often faced with the challenge of doing more with less. It has therefore fared better than other sectors having effectively managed a reduced budget. Depending on the area and the habitat and environmental issue, some parks have received increased funding as its cause has moved up the political ladder. A positive impact of the economic crisis has been that applicants for the few positions that have been open have been better qualified.

As with most environmental sectors that are project focused, the issue of long term funding is a huge issue. The continuous project funding cycle is very detrimental to an organisation in terms of staff turnover. With the lack of long term funding comes the inability to provide job security and an organisation's ability to retain highly skilled and experienced staff. This is probably the biggest challenge that this sector faces. On top of this at present the sector is experiencing:

- a drop in employment opportunities especially at the more senior level, again reducing career development potential
- a decline of the position of biodiversity conservation on the academic ladder

New technology is bringing a wealth of opportunity to the sector. New high tech approaches (satellite remote sensing, advanced computer modelling) not only means that limited resources can be put to the most effective use, but provides more interesting aspects to conservation roles and opportunities to develop skills. Other imminent opportunities this sector has are:

As public awareness and concern for the environment is raised (mainly through climate change), local environments are often the first step of involvement for many wanting to make a positive change. Involving the community in projects is of huge benefit to the project resources and longevity.

Increased awareness and action within businesses will see a rise in offsets, schemes such as biobanking as well as donations of money and resources. Job opportunities will be developed to manage these new financial incomes and in themselves will generate more work on the ground.

### **Career Profile Senior Conservation Architect Government**

**Salary:** \$51K – \$75K

**Employment Conditions:** Part time work, four days a week. Flexible working hours.

**What was your initial motivation for undertaking environmental work:**

I trained as an Architect and worked in the private sector for the first 4 years post graduation. There is a big difference in Architecture practice between the public and private sector. I decided to move into the public sector because it was more in line with my own beliefs and enabled me to believe I could make more of a difference. I found the private sector more finance driven, which is fine, but not what I wanted. The environmental sector had different priorities that are more aligned with my professional expectations.

**What was your first role in the industry:**

I worked as a conservation architect for the public sector. It's a similar role to what I have today but more junior with less responsibility.

**Outline your career path:**

I had four positions before my move into the conservation/environmental industry, all of which were within private organisations. I joined the government as a conservation architect which I did for two years. I then chose to take 12 months unpaid leave to go back into the private sector to update my skills. My government roles have tended to be less hands-on and more policy focused, so I felt the need to brush up on that part of my skill base. I then returned to work for the government in a more senior position, as a direct result of that stint.

**What are the main activities of your role:**

I administer the state Heritage Places Act 1993, dealing with the preservation and conservation of colonial built heritage. This involves the issues of sustainability and adaptive re-use of old buildings as well as the conservation of buildings. I have worked in rural areas, which has involved site visits to work on conservation projects in old settlement areas. (i.e. Old bush telegraph line, Ghan Railway Track) The visits involve speaking to owners and giving advice on conservation of the heritage buildings on their property and assist with applications for available grant funds. My role is slightly different when working in the metro area than when it's remote. The metro role is more design based, giving advice on the redevelopment of both domestic and commercial heritage structures.

**What generic skills do you think are essential for working in this role:**

The ability to communicate to different types of people is vital. Good people skills is the key to sound conservation. Conservation is only as good as the relationship you have with the owner so a lot of my time is spent fostering relationships with owners to ensure a better conservation outcome. More specific skills and knowledge are also necessary, a Bachelor of Architecture and a planning diploma is very helpful to assist the navigation between legislative requirements in various development focused acts.

**How much of what you know have you picked up on the job:**

About 70% I have picked up on the job. I have also used on the job training to improve my skills to achieve promotion.

**What are the most interesting aspects of the position:**

Travel to very amazing and different places and meeting different people. I have learnt a lot about the individual history of buildings and their context to the development of the State.

**What hours do you work and how do you manage your workload:**

I work 34 hours a week over four days. Heritage conservation is not necessarily an election winner, in comparison to education or health. In recent difficult economic times the workload has increased due to budget and job cuts, which is difficult. Our team is small but we work hard together to achieve the best we can.

**What do you gain personally from the job:**

I'm learning all the time.

**What advice do you give to someone wanting to pursue your career:**

Go for it. You require a lot of patience working in government as it is much slower than working in the private sector. However, they are great to work for with good conditions and enable you to meet your aims on a more personal level.

## Energy efficiency and renewable energy sector

*This chapter is split into a number of sections. For a list of what these are, what they cover and where the information came from please refer to The Careers Introduction.*

The energy efficiency and renewable energy sector is a mature, but fast growing sector. Australia's per capita energy consumption is one of the highest in the world, with a heavy reliance on fossil fuels. In 2004-05 Australia's total primary energy production was generated by black coal (46%), by uranium (30%), natural gas (9%) and crude oil (6%). Renewable energy production (including wood, bagasse, biofuel, hydro-electricity and solar thermal energy) accounted for only 2% of total production. (ABS Year Book Australia 2007). Coal and fuel combustion associated with transport are the biggest contributors to human induced climate change. In addition to this, Australia is one of the world's largest exporters of coal.

Conversely, Australia is the sunniest continent on earth which has other natural renewable resources in abundance (wind, geothermal, wave/tidal and biofuel). In the early 1990s Australia was a world leader in solar energy. Lack of investment and favourable policy has meant that it has been, as yet, unable to take advantage of these renewable strengths, either domestically or through exports. If Australia is to export solar energy, policies supporting renewable energy and business incentives are needed. Support and investment has started, with legislation now in place to ensure that 20 per cent of Australia's electricity comes from renewable sources by 2020, mirrored with several investment programs being implemented (renewable energy fund and energy innovation fund).

A move towards a carbon neutral economy relies on the availability of alternative sources of energy, energy efficient products and systems, policies supporting renewable energy and the resolve to change behaviour in both businesses and communities. Careers in this sector are therefore diverse, challenging and interesting. Professionals are involved in the development of alternative energy production,

development of new technology used to create new products and services that increase efficiency, the development and implementation of energy conservation programs, creation of public awareness initiatives, the development of energy policy, the development of pollution prevention, control and abatement technologies. This can involve working at a local council helping communities to reduce greenhouse gases, to selling solar power to businesses and supplying energy management information.

Further, there are a growing number of opportunities to work overseas, especially in the developing world, as communities seek to improve their quality of life and become self sufficient.

There is a fine line with regards roles within energy efficiency and renewable energy and roles within climate change and carbon trading sectors. For this guide, and in terms of job opportunities and career paths, jobs that related directly to the development of clean / new energy technologies and rollout of energy efficient infrastructure projects can be found in this section. Roles that relate to reducing the amount of carbon emitted into the atmosphere, that aren't directly related to the development and roll out of renewable energy or improved energy efficiency are classified in the climate change and carbon trading sector.

Two percent of the survey respondents worked in energy efficiency and renewable energy sector. This chapter refers exclusively to this sector. To provide a snapshot, of these respondents, 55% were aged over 35 years but have been in their roles predominately for 1 – 2 years and 10 – 15 years. Most of the respondents saw themselves as environmental professionals, but 33% identified themselves as non environmental professionals working in an environmental organisation.

### ***Typical job titles***

Civil Engineer	HR Manager
Designer	Policy Officer
Efficiency Designer	Planner
Efficiency Officer	Project Manager
Energy Analyst	Project Officer
Energy Auditor	Salesperson
Energy Modeller	Technical Advisor

### ***Main activity of the roles***

- write and design energy efficiency education and promotional material
- develop and advise on renewable energy policy
- give energy presentations to staff
- design energy systems
- attend meetings with internal and external stakeholders for low emission project development
- negotiate contracts and manage team of consultants
- project management of renewable energy project support
- provide enterprise development assistance to SME's in the sector.
- Promote sustainable practices to industry and the public
- provide technical information to industry and the public about energy management and renewable energy systems
- provide technical support for renewable energy projects and to other staff and other organisations.
- undertake energy supply negotiations
- co-ordinate solar sales, both wholesale and retail
- policy impact modeling
- develop technical and financial due diligence studies on renewable energy projects
- undertake research on energy efficiency in organisation and assess best areas for reductions in carbon emissions

### ***Education and skills***

Professionals working in this sector identified the top generic skills as:

- communication: spoken, written
- negotiation / persuasion / build argument

- ability to get along with others
- initiative and enterprise

To secure a position in this sector the following environmental specific skills or attributes were identified as being important:

- knowledge of government renewable energy policies and support mechanisms
- up to date knowledge of renewable energy technologies and systems
- up to date energy efficiency product knowledge
- knowledge of industrial energy using plant equipment
- network of contacts within the energy sector
- ability to undertake cost benefit analysis and make policy recommendations
- ability to undertake energy audit and assessments
- knowledge of environmental behavioral change
- ability to discuss environmental issues with experience, with a wide variety of clients
- experience about industry environmental activity
- energy project management and project financial appraisal skills

The variety of positions within the sector means that the academic requirement necessary for a career in this sector is diverse. The vast majority of those surveyed said that education was fundamental to their role. The research highlighted that gaining an initial broad qualification was common, with science and engineering qualifications providing a good basis. Other under graduate courses that were popular included diplomas in electrical engineering and renewable energy technology which provide a broad knowledge of renewable energy technologies and their application. Post graduate level study was common amongst professionals in this sector, with 62% having studied a master's degree or PhDs in either environmental science, energy and environmental studies.

### ***Salary and openings***

Professionals in this sector work for the full gambit of organisations involved in the generation, distribution, regulation and use of energy. Due to the breadth of the sector it has many entry opportunities.

The majority of respondents worked for government (68%). For policy, strategy, regulation and enforcement based roles, the government is the obvious place to work. The federal government department responsible for energy and resources is the Department of Innovation, Industry, Science and Research, which houses the Ministerial Council on Energy, and the Office of the Renewable Energy Regulator. Combined, they are responsible for the policy development, regulation and governance of energy production and oversee the implementation of the Australian Government's mandatory renewable energy target. It works closely with the Department of Environment, Water, Heritage and Arts, Climate Change Division, Renewable Energy Efficiency Division and Energy Efficiency Taskforce on federal climate change and energy efficiency strategies. Each state and territory has government departments and agencies that develop and implement policy, plan and regulate the distribution of energy to meet the needs of their state and territory.

In terms of technical and research roles, there are research institutes and private companies that recruit professionals to develop systems and products to increase energy efficiency in the generation, distribution and utilisation of energy resources. Other organisations that have environmental professionals working for them include electricity generating companies, electricity distribution companies, industry associations and transmission companies. These organisations employ professionals to develop and implement programs that use these new emerging technologies and conservation practices.

Other opportunities lie with not for profit organisations that campaign for stronger renewable energy targets and implement energy efficiency and conservation programs within both communities and businesses. They work along side local councils and energy distribution companies to encourage the uptake of new efficient products or conservation practices.



As a guide, the professionals who worked in this sector, 78% worked full time and earned \$51k - \$75k (38%) and \$75k – 100k (38%)

Common employers of those surveyed included Sustainability Victoria, Queensland Department of Mines and Energy, Western Power, CitiPower and the Australian Business Council for Sustainable Energy.

***The personal touch – hear from the energy efficiency and renewable energy professionals....***

The industry is changing rapidly, so having up to date knowledge of the policy, regulatory frameworks, and the available and developing technologies is essential. Alongside that general career experience and environmental qualification were identified as being helpful in securing employment in the sector.

Other skills and actions which have proved really helpful include:

- having good exposure to a variety of experiences within the sector (the private sector, civil society as well as public sector) helps to understand many of the issues from different angles.
- generic project management experience
- passion for renewable power

For technical roles, you will need to have intimate knowledge of energy systems, greenhouse accounting and renewable energy to make sound and credible recommendations

***The sector's future***

On the whole the respondents felt that their sector had fared well in the recent economic downturn, with the majority stating it had not been affected. However, development budgets are 12 months out of synch with the real economy, so there could potentially be some cuts in budget for the 2010-2011 financial year. Unrelated to the downturn, the federal government changes to solar energy rebate program has negatively affected the industry, however, other programs such as the Energy Efficient Homes Package has meant more activity in solar hot water installation. Due to the capital investment involved in energy efficiency products in industry and communities, the sector is severely affected by government policy and programs.

The supply of energy in Australia faces many challenges over the next ten years. Increasing domestic consumption, the need for investment in new assets and policy measures aimed at reducing greenhouse gases, will all shape the investment in technologies needed to drive the production of renewable energy in the medium to long term (ABARE 2008). Other challenges have been identified:

- the retention of experienced personnel is a problem, especially with a large percentage of senior/experienced people retiring over the next four to five years.
- the reliance on consultants to undertake work for Government does not build the capacity of governments. It's vital for them to undertake this work themselves to achieve sustainability.
- even with energy efficiency having a direct financial win, changing conventional norms and enabling rapid and significant changes in all sectors of society, especially with attitude to energy, its source and its use, is challenging.

Energy efficiency and renewable energy is increasingly seen as a priority issue, which means that there are growing number of opportunities to work in this expanding industry. There are great opportunities for those moving into the industry for the first time and for those wanting to move up through the ranks. More specifically if government(s) is going to meet their own targets, there is the potential for facilities managers and units across government departments to be trained in sustainability. On an international note, renewable energy is increasingly being recognised as a great development for poor countries, so international opportunities are opening up for Australian energy professionals.

## Career Profile

### Project Manager Renewable Energy International Projects for Not for Profit Organisation

**Salary bracket:** \$40K - \$50K

**Employment Conditions:** Permanent position, four days a week, flexible working hours, good place to work, get to work overseas.

**What was your initial motivation for undertaking environmental work:**

I've always had a commitment to the environment and went into that area when I went to study.

**What was your first role in the industry:**

Research Assistant for the federal government.

**Outline your career path since then:**

I've worked in many areas of the environmental and development industry. I worked for the federal government in both policy and project areas. I've been an organic farmer and an environmental campaigner for forest conservation and sustainable urban development, being employed by not for profit organisations. I've also worked in the community sector conducting training projects for urban agriculture/horticulture. So I have a very broad base in terms of skills and experience.

**What are the main activities of your role:**

I project manage international solar power projects. This involves dealing with the initial request, scoping out the project and developing a project plan, organising and managing the shipment of materials and the installation of the solar system. I also manage the technical teams and communicate with the clients, and finally write reports. Along side this I also speak at conferences and do strategic planning for the international project area.

**What generic skills do you think are essential for working in this role:**

All communication skills are essential as well as Inter-cultural skills. Development work involves close liaison with people from other countries so you have to be sensitive to how people make decisions, communicate and work.

**How much of what you know have you picked up on the job:**

Overall, about 30%. This is mainly the technical element of the job. The rest I bring with me from previous roles and experiences.

**What are the most interesting aspects of the position:**

Inter-cultural dimension of the role and working with interesting technology that is moving and advancing quickly.

**What hours do you work and how do you manage your workload:**

My four days a week are flexible hours. The line of work is very seasonal, so I work longer hours when its needed and take time off when the workload is quieter.

**What do you gain personally from the job:**

Gain personal satisfaction that I have the ability to roll out projects that are both good for people (helps the development of poorer communities and their quality of life) and the planet.

**What advice do you give to someone wanting to pursue your career:**

Go where your energy is that is do what interests you. From an international perspective, if you want to work overseas, there's alot more opportunities for you to find work in the country you want to work in, actually in the country. So get voluntary work, get out there and put your feelers out. Real "in-country" contacts and experience will help more than an extra course.

## Environmental consultancy sector

*This chapter is split into a number of sections. For a list of what these are, what they cover and where the information came from please refer to The Careers Introduction.*

Environmental consulting spans a wide spectrum of the environmental industry. The key distinguishing factor to identify an environmental consultancy role from others is you work for an environmental consultancy, who are themselves hired as a third party to work with clients to ensure that they are compliant with environmental regulations. These clients can be both private industry and all levels of government. The result of this is that you technically work for one organisation, but practically work for another, sometimes two or more.

The size and focus of an environmental consultancy varies, but include:

- large or multinational environmental consultancies who generalise across a wide range of disciplines and have departments of specialisations
- multinational consultancies who have an environmental department that generalise across a wide range of disciplines
- small to medium sized consultancies who generalise across a wide range of disciplines and have individuals with specialisations
- small consultancies who specialise in certain areas of environmental consultancy

Environmental consultants therefore work in a very wide variety of fields, which can be categorized into three types:

- Pollution : Prevention, abatement and management
- Development and infrastructure: Design and planning
- Environmental management of businesses

In all types, the overall aim of an environmental consultant is to advise and direct clients so that they are compliant with environmental legislation and avoid possible fines, legal action or unsuitable transactions. They also aim to get the best possible result for the environment, informing clients actions and decisions so that they have the minimal environmental impact, locally and globally. More specifically:

Environmental consultants who work in pollution prevention, abatement and management get involved with the assessment, remediation and auditing of pollution, management of clean up operations, and modeling pollution flow and impact identification. This may be undertaken to restore an area back to its original environmental quality after an incident or done to allow redevelopment of old commercial industrial sites.

Consultants who work with development and infrastructure are involved in either new specific projects or existing ongoing systems. They work to provide strategic advice to major infrastructure clients and developers on the most appropriate use and development of land, identify and manage impacts on the environment from new construction and infrastructure projects and identify the legislation they have to work within and possible licenses they might need. Others provide advice to industrial or public sector infrastructure managers regarding international, federal, state and local environmental planning, management and reporting requirements.

Finally those involved in environmental management, provide advice to private businesses and all levels of government to improve environmental and business performance of their organisation. They assist businesses to understand the impact of sustainability on their business, develop strategies and actions to reduce their impacts and reap the benefits from adapting to the changing business world. They also work with local government and non-profit environmental organisation to provide advice on sustainability approaches within community based projects.

There are a number of support staff who work for environmental consultancies, providing alternative opportunities to work within this diverse sector.

Naturally, there is the potential for considerable overlap with other sections in this guide. An environmental consultant working in water quality may be included in this section or the water quality sector. It is therefore advisable to read both relevant sections. For the purposes of this guide, respondents who have classified themselves as environmental consultants have been included in this section. Additionally it should be noted that there are a lot of synergies with this sector and the Environmental Impact Assessment (EIA) sector. Environmental Impact Assessment is often seen as a sub sect of environmental consultancy. Due to the level of responses in the EIA field, it has been given its own section and has been researched as a separate sector. Again, it is recommended that you read both sections if that is the area in which you wish to develop a career.

Seventeen percent of the survey respondents worked in an environmental consultancy. This chapter refers exclusively to this sector. A snapshot shows that 30% of the respondents were aged 31 – 36 and

24% aged 41 and over. Fifty nine percent of the respondents were male and 30% have been working in the environmental industry for 5 – 10 years.

### **Typical job titles**

Bookkeeper	Finance Officer
Business Support Officer	Geologist
Chief Executive Officer	Group Compliance Officer
Environmental Auditor	Hydrogeologist
Environmental Consultant	Principal Environmental Hydrogeologist
Environmental Engineer	Principal Environmental Scientist
Environmental Manager	Remediation Project Manager
Environmental Scientist	Soil Scientist
Environmental Systems Manager	Teacher

### **Main activity of the roles**

- accounts payable and receivable
- client liaison (project scoping, regular communications, workshops and presentations)
- assess environmental risks and provide risk management advice
- design, plan, conduct and report environmental investigations
- undertake desk top study – find possible cause of the problem
- undertake field study – investigate, sample and assess soil, water and air contamination
- undertake co-ordinated Environmental Monitoring Program (CEMP)
- data collation, monitor events and environmental modeling
- develop and propose monitoring and remediation plans
- provide advice on development feasibility
- fee proposal, tender bid and report writing
- talk to business people about their business, identify options for improving environmental and business performance improvements
- project management and co-ordination (proposals, contracts, budgets, financials, time scheduling, resourcing, communications, etc)
- chair planning panels, convene special interest groups and facilitate workshops
- run professional development workshops and conference presentations
- develop training material
- develop/improve/create sustainability products and services
- design solutions, such as stormwater treatment systems
- mentor younger staff and student placements and supervision and co-ordination of staff / team
- review other consultants reports and work
- strategic business planning

### **Education and skills**

The professional working in this sector identified the following as the top generic skills:

- communication - written
- communication - spoken
- team work and co-ordination skills
- identifying complex problems and providing solutions
- critical thinking
- judgement and decision making

The top environmental specific skills or attributes were identified as:

- broad global experience in strategic and environmental management planning in private practice and local government
- knowledge, and the application, of environmental legislation / guidelines / regulatory frameworks
- planning approvals process knowledge
- having an environmental management / science degree
- having a Diploma of Sustainability which provides a good basis
- hands-on understanding of the environment and its systems and interactions between them (geology, hydrogeology, atmosphere)

- general knowledge of approach to managing environmental issues (e.g. waste, water, noise, air, heritage, cont land, climate change, etc)
- general scientific knowledge
- geology, hydrogeology, chemistry, botanical, eco-toxicology, soil science expertise (depending on the roles specialism)
- experience in Environmental Management System (EMS) training
- aptitude with new technology
- experimental design, problem solving and risk analysis
- research skills and sampling techniques
- GIS mapping and modeling (Mapinfo, Surfer, excel, global mapper etc)
- ability to analyse and interpret data
- statistics and data management
- scientific report writing skills
- technical writing
- ability to communicate sustainable solutions for business - link sustainability to business benefits
- ability to communicate technical information to non-technical people

Further education is essential to be an environmental consultant. To enter and progress within this sector is advisable to have a broad knowledge and skill base, along side an area of specialisation. This gives you the flexibility to work in a number of different organisations and in roles of varying levels. Today, all environmental consultants have an undergraduate degree, predominately in environmental engineering or environmental science. Obviously depending on the specialisation, other education avenues are highly regarded. Those involved in pollution have science degrees, mainly in chemistry, toxicology, hydrogeology and aquatic biology. Consultants who work in development and infrastructure have engineering degrees including civil and geo-engineering. Finally those looking to specialist in environmental management side of the sector have undertaken degrees in planning studies, environmental management and business.

Of those surveyed, 61% were educated to a postgraduate level having studied graduate certificates, graduate diplomas and masters courses. Postgraduate study is used to develop career opportunities and therefore focus on skill development as well as increased knowledge in a specific environmental area. Disciplines include project management, planning, environmental management and environmental technology. Specialisations of those surveyed included eco-toxicology, tropical wildlife management, geology and hydrogeology, but yours will need to be related to your area of interest.

Regardless of specialisation, environmental consultants need a deep knowledge on environmental regulations, so post graduate study in environmental policy and legislations are also highly regarded.

### ***Salary and openings***

As mentioned, there are a huge variety of environmental consultancies in Australia, in terms of both size and specialisation. However, this doesn't mean that it's any easier to make a break in this sector than any other. Competition is strong and candidates who can demonstrate both relevant study and work experience are preferred. Work is generally full time hours, but is offered on both permanent and contract arrangements. The latter is often used by new professionals as a way to gain work experience but also make contacts within the industry. A few opportunities lie within the not for profit sector.

Due to the nature of a consulting role, another opportunity further move down the career path is to set up your own business. Of those surveyed 8% had their own business. However for new graduates gaining employment in an established company should be a priority, because working for a small start-up company is hard and not advised due to limited mentoring potential

Common employers of those surveyed included: AECOM, Aquaterra, Aurecon, Biosis Research Pty. Ltd, Bureau Veritas HSE, Carbon Reduction Institute, CH2M HILL, Coffey, DesignFlow, Douglas Partners Pty Ltd, ENV Australia, Environmental Earth Sciences, Environmental Resources Management Australia, GHD, Golder Associates, Ironbark Sustainability, Lane Piper Pty Ltd, Lloyd Consulting, OTEK Australia Pty Ltd, Parsons Brinckerhoff, Shearwater Associates Pty Ltd, Sinclair Knight Merz, Soil and Groundwater Consulting, VECI - Victorian Employers Chamber of Commerce and Industry.



This is one of the better paid professions within the environmental industry. Of those surveyed 39% earned between \$75k - \$100k, 35% between \$51k – 75k, and 10% earned \$100k - \$125K. A further 8% earned \$150k plus, which is a salary bracket few other sectors specified.

### ***The personal touch – hear from the environmental consulting professionals....***

What do you need to do and have to get a job as an environmental consultant? The professionals in this sector had a wealth of information and advice they wanted to share with budding environmental consultants. There is a clear consensus that strong environmental technical qualifications and skills gained from an environmental qualification (science or engineering) is essential. To have good general knowledge of as many environmental aspects as possible, and then to specialise in a few select areas is advised. What else is clear that it's a demanding sector where you will need to work some long hours for not much money (initially), even with an advanced degree. You also need to be prepared to be enthusiastic about tasks you'd prefer not to do, get dirty, listen and learn. As a client focused role, people skills are just as important as environmental, so interpersonal and management skills such as business aptitude, time management, customer service, writing skills and project management are equally regarded. As a consultant, communication, organisation, professionalism and reliability are vital to success.

To get your first role within the sector make sure you:

- talk to people who work in the industry about what is actually involved in their day to day job. This research enables you to understand the roles in the sector (i.e. mostly office-based or field-based) so you can manage expectations and be happy in your first position; to understand and apply for jobs that you think you will really enjoy and have the attributes to do well; and get the background information needed to prepare for interview.
- cold call and proactively canvas for jobs, as many aren't advertised. Never rely on general posting of your CV to big companies, because they get overlooked. Make sure you try to track down people in the company who make the decisions and speak to them personally
- include your academic record in your application
- read the most current state of policy, international reports on climate change, sustainability and other main issues o keep abreast of the ever changing industry and the forces affecting it
- do volunteer work to gain a better insight, specific skills and knowledge and show commitment

To progress in the sector you need to have a proactive approach to acquiring new skills and knowledge and be able to pick them up quickly on the run. Building a professional network in the industry and developing a strong client base are essential in developing a reputation. Project management experience is essential so further study or work experience in this area is advisable. There is a lack of specialist programs in Australia, so to develop new technical skills try postgraduate training overseas. This is also highly regarded.

### ***The sector's future***

Due to the diversity of this sector in terms of client base and the different fields and specialisation, some parts of the sector have barely felt the economic down turn where as some have been severely impacted. Generally, consultancies who are working with government clients in the fields of pollution and infrastructure have fared really well and in some cases have been busier than they were previously. The main reason for this is the regulatory and legal requirements still need to be complied with despite the economic down turn, this has meant little change in this area. Also the government have announced a number of large infrastructure projects and initiatives such as the economic stimulus package, which has generated more work. However, a reduction in private construction and development work has meant a reduction in work in areas such as impact and contaminated site assessments. The reduction in private clients in the development and infrastructure fields has suffered the biggest impact in terms of redundancies, reductions to work loads and loss of clients. But with increasing numbers of other industries (such as construction, manufacturing, agriculture, and scientific research sector) employing more environmental consultancies, the industry is expected to grow considerable over the next decade.

The most significant issue for this sector is the ability to recruit and retain highly skilled, experienced and competent personnel. There is a critical lack of people with actual environmental skills and experience (not generic skills and theory) and with limited specialist courses and no training available, its really difficult to get these skills. The survey identified the knowledge gap being with maths, physics, chemistry, geology, biology, project management and writing skills. Finding multi-skilled and experienced scientific staff that can project manage and write high quality scientific reports is getting harder year by year. Having said that, it works two ways and attracting quality graduates to a sector of the environment industry that is not seen as a true 'green' career, doesn't help. Flat management structures makes retaining younger professionals after approximately four years of experience really difficult.

This sector is at the forefront of integrating environmental management into other industries and central to developing environmentally sensitive developments and infrastructure. Key challenges associated with this are :

- ensuring sustainability becomes an even greater focus in environmental management
- building the capacity of clients to ensure ongoing sustainability of the organisation
- defining and mapping the industry and identifying strategic priorities for industry integration (new potential clients)
- being sustainable in what and how they do business themselves

The main opportunities within this sector was identified as two fold. The demand for inner city and urban land and the increase of environmental legislation and policy. Population growth and urban policies restricting urban sprawl mean that redeveloping brown field or contaminated sites is becoming a growth area. It provides society with the real chance to access and clean up these sites and put them to good and cleaner use. But to support this, there is a need to develop suitable professionals by offering qualifications (majors) in this area.

Environmental actions and works are increasing as regulations increase, they are getting stricter and more common place. Environmental consultants are at the front line in providing professional services to industry to serve and meet these new policies. With predicted massive changes in government policy and increased social pressure, this sector is set to be very busy for a long time.

### **Career Profile Project Manager Private Business Environmental Consultancy**

**Salary bracket:** \$60 - \$75K

**Employment Conditions:** Full time, business owner.

**What was your initial motivation for undertaking environmental work:**

I grew up in the bush and loved the environment from a very early age. My mom always used to say 'Do what you love to doing when it comes to work' so the two naturally put me into the environmental sector.

**What was your first role in the industry:**

I was a Environmental Restoration Officer working on a project for a large company.

**Outline your career path since then**

I was promoted from that role in 6 weeks and became second in charge to the project. Soon after I was made the Project manager which I did for a year. This experience lead me to start own business. I did other full time roles to broaden my knowledge and experience, whilst setting up my own business in the background. I worked as a trainer for Greening Australia and as a supervisor for a weed control and bush regeneration company. These two roles gave me vital skills and knowledge I needed to match my plant identification skills to enable me to set up in business.

**What are the main activities of your role**

I am running a business so activities are very diverse on a day to day basis. I manage five employees and are still working out in the field managing projects. This involves site visits, managing the whole spectrum of bush revegetation, from seed collection, propagation and replanting. We work alot on major constructions sites so a lot of my work involves risk assessment and safety management. I also do business development and marketing to secure future projects.

**What generic skills do you think are essential for working in this role**

Good organisation skills are vital in this role. More specific skills vital to this role include plant identification skills. Due to my experience the company has developed good safety skills that has enabled us to develop a niche and work within the construction industry, which has been great for business.

**How much of what you know have you picked up on the job**

A lot, I'm learning all the time. The more experiences you have the more you learn and you really get to know what you're doing very well.

**What are the most interesting aspects of the position**

I'm an obsessive compulsive when it comes to plants, so I'm in my perfect job. Finding new plants is fantastic great and seeing plants that are old friends is lovely.

**How do you manage your workload**

My biggest challenge now is trying to work less in the field and work more on business development. It's difficult as clients want the project manager on site. This results in late nights as I do other work then. One thing I learn at TAFE was to keep your desk tidy and handle one piece of paper at a time and only once. It's the way to get things done.

**What do you gain personally from the job**

I enjoy being a women in business. I have a network of females who support me and my business (i.e. bank manager) which is great and creates a very strong support group, which gives good balance when you're working in the construction industry.

**What advice do you give to someone wanting to pursue your career**

Work hard and love what your doing. Be proactive and forward thinking in every role that you do. Try and take answers to your managers rather than just problems. For my area of work I recommend TAFE over University, as you're learning hands on while your learning. You need experience to secure any role, and you've done a lot of this through the TAFE system, because you do a lot of field work.

## **Environmental education and training sector**

*This chapter is split into a number of sections. For a list of what these are, what they cover and where the information came from please refer to The Careers Introduction.*

The environmental education and training sector is a fairly mature sector within the environmental industry, being active since the early 1970s. It has grown considerably since then, as education has moved into primary schools, secondary schools, tertiary institutions, communities, businesses, national parks, gardens, zoos, government department and agencies.

Environmental education is a broad based inter disciplinary holistic process for fostering community awareness, understanding and action. As federal and state government have recognised the important role education plays in creating behaviour change, both have developed environmental education plans and strategies which identify priorities and preferred methods in its delivery. Environmental education is increasingly being referred to as 'sustainability education' or 'education for sustainability'. The federal government has identified four strategies: Demonstrating Australian Government leadership, Reorienting education systems to sustainability, Fostering sustainability in business and industry and harnessing community spirit to act. This will shape the sector in the future.

Careers in this sector are challenging, fun, very rewarding, with everyday offering something different. As the audiences of education for sustainability is wide, so to are the organisations delivering it. Education programs are developed and implemented by state governments, local governments, schools, universities, not for profit organisations, private companies and consultancies. The programs include one off experiences such as school field trips or nature interpretation and talks, to more long term education programs, such as primary and secondary school sustainability projects and community capacity building initiatives, and small to medium business training programs. The programs all play a role in helping the audience reduce their environmental impact and live their lives more sustainably, by covering the topics of waste, water, energy, biodiversity, conservation, transport, either separately or collectively, depending on area of knowledge and expertise of organisation delivering the program.

University and colleges deliver tertiary environmental courses to those wanting to secure a career within the industry and units to those interested in incorporating sustainability into their learning. Education establishments themselves are going through greening programs, involving capital works, changing of procedures and systems and training of staff.

The sector also has strong research element, with many universities and several think tanks researching into, and evaluating the success of, programs and developing education and behaviour change theory.

Environmental education is very different from sustainability communications and public awareness sector, although both actively contribute to behaviour change. Education is actual engagement of a person(s) in learning something new as part of a program, whilst communications and public awareness is more media and advertising focussed.

Five percent of the survey respondents worked in environmental education and training. This chapter refers exclusively to this sector. As a snapshot, 37% of respondents were aged 41 or more and 80% of respondents were female. A third of them had worked in the industry for 3 – 5 years.

### ***Typical job titles***

Business Support Officer	Information and Interpretation Officer
Catchment Education Officer	Interpretation Officer
Coastal Educator	Litter Champion
Conservation Officer	Online Community Developer
Education Co-ordinator	Project Officer
Education Officer	Secondary School Teacher
Environment Officer	Sustainability Facilitator and Curriculum Advisor
Environmental Education Co-ordinator	Sustainability Officer
Facilitator	Training Co-ordinator
Green Skills Training Specialist	University Lecturer

### ***Main activity of the roles***

- project administration and management tasks, such as reporting to stakeholders and management about project progress and challenges, seeking solutions and better ways to do things
- plan and fund raise for future projects, which involves applying for grants
- build the capacity of, and supervise, staff
- liaise with regional staff and other departmental branches
- be a contact for environmental issues in local area for the media
- develop educational resources for students to use in school and on excursions
- develop tools for small to medium businesses to help them reduce their environmental impact
- manage resources for training
- promote the project, its aims and its deliverables
- undertake website maintenance and manage content
- develop newsletters, brochures and articles for children, visitors and wider community
- write and edit reports
- co-ordinate volunteers, such as the Work Experience Program
- run classroom and field education (ecology walks, nocturnal walks) activities for students
- mentor school staff/teachers to adopt greater sustainability in their operations, curriculum and community interactions
- deliver workshops, training and development sessions to local teachers on environmental topics
- undertake community talks on a variety of topics
- advise small to medium businesses on how to reduce their environmental impact
- facilitate behavior change through professional learning sessions, workshops and team meetings
- course development management
- run interpretive presentations and tours to visitors
- provide advise on sustainable training
- run teacher professional development sessions
- run school incursions for sustainability programs
- speak at or attend associated sustainability events that promote positive change within schools or their surrounding communities
- run youth forums to empower youth voice on environmental issues and action
- develop online networking sites and manage groups
- liaise and build relationships with partners and stakeholders

### ***Education and skills***

The careers within this sector are very people focussed and therefore the top generic skills are:

- communication skills – spoken
- communication skills – written
- ability to get along with others
- communication – customer service
- team work – co-ordination
- initiative and enterprise

The top environmental specific skills or attributes were identified as:

- the ability to relate to your audience (children, communities, business owners)
- the ability to adapt and quickly
- understanding the concept of behavior change and the role of education within it
- understanding interpretation fundamentals
- broad knowledge of national and local environmental issues and ecological principles
- environmental industry knowledge
- strong contacts and networks in environmental education field
- in-depth knowledge of your subject area / specialty (energy efficiency, waste minimisation, water efficiency, biodiversity) and audience location (household sustainability, school sustainability, business sustainability)
- a variety of environmental education experience, including school, community, corporate
- environmental management skills
- experience in developing sustainable training courses
- experience in working with local government
- real passion for change and action for sustainability
- stakeholder management skills
- teaching knowledge and experience

Working as an environmental educator brings a wealth of opportunities in both formal and non formal education areas. The options for education and career pathways are also broad. Generally there are two essential elements, the environmental and the educational, and how you gain experience and knowledge in both these areas can vary. One option is to start with an education background, undertaking a teaching degree (Bachelor of Teaching in Primary or Secondary), then moving into a specialisation through either work experience or post graduate study. If you want to pursue a career in environmental education in schools, then you have to take this route to ensure you have the right teaching credentials. Another option is to undertake a broad environmental degree such as environmental science, applied science, environmental studies or environmental management and getting specialised education skills and knowledge through either work experience or post graduate study. The latter is probably the most common route and can therefore be competitive.

Due to the need to have experience and skills in education and environment, a large percentage of respondents were educated to a post graduate level (53%). Those with technical backgrounds following up with postgraduate study in education, commonly studied a masters of environmental education. Others taking the alternative route undertook post graduate study in environmental management, natural resource management, science and environment and planning. Generally the most useful subjects were identified as being interpretation, curriculum development, community development, environmental management, so undertaking any short courses in these would be really valuable.

### ***Salary and openings***

Due to the breadth of organisations involved in delivering environmental education and training and the wide spectrum of audiences engaged in it, the employment opportunities in this sector are very broad. Within the formal education system, environmental teachers are recruited within primary schools to implement corresponding sections of the curriculum and are often the 'environment' person within the school, incorporating any capital work projects into the curriculum. Historically, at a secondary level, the environment has tended to fall to the science and geography teachers to deliver. However with changing integrated curriculum's this is slowly changing, with environmental teachers being recruited at this level too. At tertiary level, the delivery of environmental education is spread across disciplines and is



represented in schools / faculties related to earth sciences, biology, ecology, geography, natural resource management, sustainable development and planning. Increasingly, environmental sustainability is being incorporated into other disciplines.

Environmental education professionals are also recruited by government, government agencies, not for profit organisations, consultancy firms and industry to design and delivery education and training programs. Many of the positions in government agencies, consultancy firms and industry are stand alone positions; whereas those in government and not for profit organisations are part of a larger team or part of a broader program.

National parks and other visitor attractions that have animals and / or gardens, also employ environmental educators. Employed as interpretators, these professionals enable visitors not only to appreciate and enjoy their experience, but to take away learning's about, and connect to, the wider environment.

Increasingly, opportunities within consultancies are opening up for environmental education and training professionals as businesses look for experts to come in and train staff on sustainability practices.

Of those who responded 50% worked for Government, 33% for a not for profit organisation, 11% for academia and 5% for business. There is a lot of opportunity for part time employment and contract work in this sector. The latter provides little job security which can be an issue for some.

Commonly the organisations respondent worked for included: Victorian Litter Action Alliance, Parks and Wildlife Service of the Northern Territory, Department of Environmental and Heritage SA, The Melbourne Aquarium, Department for Environment, Heritage, Water and Arts, Queensland University of Technology, Victorian Employers' Chamber of Commerce and Industry (VECCI), CERES Community Environment Park, Sustainability Victoria, Leichhardt Council and Conservation Volunteers Australia.

The environmental education sector is not renown for being well paid. Of those surveyed 47% earned between \$51k - \$75k, 24% between \$41k - \$50k.

### ***The personal touch – hear from the environmental education and training professionals....***

Having both specific environmental and education skills and education have proved to be valuable in securing work in this sector. So to has experience in public speaking and event co-ordination. Having the confidence to talk in public is vital, so getting experience in public speaking to the point where you are comfortable (and enjoy) doing it, is essential. You need to be able to adjust your communication style to any client demographic or need and show a passion for the subject are if you want to inspire and engage them. Good communication and interpersonal skills, flexibility and open mindedness are the essential in order to be successful.

Like most sectors, networking is essential. By becoming an active member of members' organisations and networks, you can keep up to date with the sector, the latest education / teaching / behavior change methods as well as the opportunities out there. Other tips include:

- undertake voluntary work at schools and associated sustainability education providers as an entry into the sector.
- local government experience is really useful in understanding priorities, issues and challenges.
- understand current environmental issues and government environmental education initiatives
- work experience and industry knowledge is very important when getting into the government sector
- get some experience working within a small to medium business and learn about ways to engage this sector. This is the new market for this sector and they are hard to engage with.

### ***The sector's future***

The impact of the economic downturn on this sector has been very mixed, and largely dependant on organisation type (i.e. school / business) and the funding source for education projects. Education establishments (primary, secondary and tertiary) tend to fair well in economic trouble. Government capital spending has created opportunities for school to include sustainability practices into their

buildings as well as their curriculum. People who have been made redundant (across industry in general) often look to change career. This can involve re-training and increase enrolments to environmental courses.

On the other hand launching environmental education projects have been affected by government budget cuts and corporations not having the confidence to enter sponsorship deals or take up advertising opportunities. Existing projects with fixed term funding have obviously not been affected other than reduced number of attendees to workshops and training events. Individuals affected by the crisis have stopped participation in events or schools excursions.

Interestingly this sector is having negative experiences following on from government interventions. Businesses that plan to be involved in the Carbon Pollution Reduction Scheme, no longer see education as a priority. The sector faces the challenge of engaging audiences at a higher holistic level, engaging and encouraging them to undertake a suite of actions and change their behavior for the long term, rather than doing one action and ticking a box showing it as 'done'. In addition, environmental education is still associated predominately with primary schools, with little budget and policy priority to enable education elsewhere. Conversely more funding is required to support and include all Australian schools into a systematic program to embrace sustainability action, education and promotion to their local community.

Other challenges this sector faces is:

- retaining staff to keep knowledge depth in organisations
- to find staff willing to be flexible and adaptable
- effectively communicating and working with low income/disadvantaged communities to participate in energy and water saving measures
- a potential over supply of environmental professionals in some areas of the industry and undersupply in others, if no assessment of demand is undertaken.
- finding funding for pilot projects

On a positive note, a lot of Schools are now taking on sustainability programs as part of their day-to-day program. There is a greater role for 'greening the curriculum' in universities. With increased potential for green collar careers, the pressure to include environmental sustainability content in university courses is increased, which in turn influences secondary schools approach to environmental education. So the presence of environmental education within the formal education sector is set to get stronger as the need for green collar workers intensifies.

With the current climate, businesses are looking to save money and being more environmentally sensitive in daily practices provides a way to do this. There may be increased opportunities in training businesses and their personnel in sustainable business practices.

### **Career Profile Environmental Fisheries Extension Officer at National Not for Profit Organisation**

**Salary bracket:** \$50K – \$60K

**Employment Conditions:** Fulltime 4 year contract (only just granted, previously on 18 month, then 6 month contract).

**What was your initial motivation for undertaking environmental work:**

To make a difference in the commercial fishing industry – to get participants, managers and scientists working together towards the common goal of sustainability.

**What was your first role in the industry**

This is my first role within the industry.

**What are the main activities of your role**

Facilitating transfer of information between fishing industry and stakeholders

Empowering fishing industry to be responsible for their environmental performance and communicate that effectively to stakeholders

Facilitate development of Environmental Management Systems

Facilitate development of Bycatch Reduction devices (i.e. reduce environmental impact of fishing)

**What generic skills do you think are essential for working in this role**

Outrageously excellent communication skills so you can communicate with all levels from illiterate to accomplished scientists. A lot of patience and the ability to NOT make people feel wrong for what they are doing now. Ability to learn is vital.

**How much of what you know have you picked up on the job**

About 50%, including commonwealth fisheries management arrangements and environmental policies and NRM organisations. Whilst I had a network of stakeholders I was familiar with, this has expanded by about 500%, so intimate knowledge of the networks and how they relate (or don't relate) has been really important too, along with knowledge of funding bodies and grant application process.

**What are the most interesting aspects of the position**

Watching people have 'ahha' moments of realisation. For me it's really about managing the people rather than the environment. When there is a WIN WIN scenario, that is awesome.

**What hours do you work and how do you manage your workload:**

About 50-60 hrs per week....I manage that around my family by being very flexible in the times and locations that I work.

**What do you gain personally from the job**

The opportunity to make a difference to the people in the industry and the communities that rely on the fishing industry.

**What advice do you give to someone wanting to pursue your career**

Be patient.

**Environmental impact assessment sector**

*This chapter is split into a number of sections. For a list of what these are, what they cover and where the information came from please refer to The Careers Introduction.*

Environmental Impact Assessment (EIA) is an assessment of the possible negative and positive impacts that a proposed project or action may have on the natural and built environment and the social and economic networks that make up our society. Professionals involved in this industry undertake research and provide advice to clients to enable them to understand the full suite of consequences when making a decision about a project or an action..

The International Association for Impact Assessment (IAIA) defines an environmental impact assessment as the process of identifying, predicting, evaluating and mitigating the effects of development proposals prior to major decisions being taken and commitments made. EIA includes the analysis of water, soil, biodiversity and air (including noises and acoustics), of processes (such as waste management) of services (such as transport) and the risk management of natural events (such as flooding). A growth area within this sector is mitigating climate change as this has serious implications on society and business, especially the insurance industry.

As well as projects, Environmental Impact Assessment professionals advice on strategic and statutory planning, getting involved with assessing the potential impacts of planning rezoning.

The work itself is varied with both office and field based tasks. Increasingly, modelling and mapping software is be used to demonstrate and model impacts.

EIA work is undertaken for government, private companies, natural resource management organisations, research bodies and communities, from both sides of the project fence. The information can be used to support the project but can also be used to dispute it. Governments used EIA to understand the environmental, social and economic implications of a project and use this to make recommendations and make decisions on whether planning should be granted.

Environmental Impact Assessment is often seen as a sub sect of environmental consultancy. It also has links to other sectors within the environment industry, such as water quality, waste management, land quality. Due to the level of responses in the EIA field in this research and the nature of the work, it has been given its own section and written as a separate sector. It is recommended that you read the environmental consultancy section and any other sectors that may be of interest to you.

Two percent of the survey respondents worked in environmental impact assessment sector. This chapter refers exclusively to this sector. A snapshot shows that 33% are aged between 36 – 40 years old and 22% aged between 22 – 25 years old. There's a good cross section of experienced and new professionals.

### **Typical job titles**

Acoustic Engineer	Environmental Scientist
Assessor	Environmental Scientist
Environmental and Social Impact Assessor	GIS Officer
Environmental Auditor	Research Analyst
Environmental Impact Officer	Team Leader
Environmental Officer	

### **Main activity of the roles**

- achieve accurate repeatable results when analysing samples and keeping good records
- interpret and report analytical results and write reports
- assess development proposals for environmental impacts and undertake site visits
- advise and make recommendations on likely environmental impacts and acceptability of proposals
- assess the impacts of changes in land use planning
- assess Environmental Management Plans to ensure effective implementation
- develop instructional documentation for external clients on how to implement plans and submitting information to necessary bodies
- read hefty documents and identify information/outcome gaps
- review and critique client documents on aspects of EIA specific to proposals
- sit on intergovernmental panels/attend workshops on various policy issues
- understand and apply environmental policy and legislation
- analyse water and soil samples
- undertake environmental analysis using GIS
- undertake community consultation
- build client relationships and discussing issues
- create and modify corporate data
- enter and qualify proponent spatial data into administrative systems
- lead a team of laboratory staff, laboratory technicians and chemists
- maintain scientific equipment used in the analysis of water and soil
- deliver presentations to clients and colleagues

### **Education and skills**

The professionals in this sector identified the following as the top generic skills:

- communication – written
- judgment and decision making
- critical thinking
- team work – co-ordination
- timeliness
- identifying complex problems and providing solutions

The top environmental specific skills or attributes were identified as:

- basic knowledge of state and federal environmental law
- basic environmental systems and ecosystem knowledge (i.e. groundwater processes and vegetation values)
- Environmental Impact Assessment (EIA) skills
- general knowledge covering all environmental issues
- GIS mapping
- environmental industry experience
- good strong expert knowledge of a specific area (i.e. marine) and discipline (environmental chemistry, analytical chemistry)
- experience in public consultation

- experience using modeling software

Having a tertiary qualification is essential to enter and work in this sector. Three quarters of the survey respondents had an environmental qualification, suggesting that this is the most favourable route. The most recognised qualification is a degree in environmental science or environmental management. Others have come down the science route having done a degree in chemistry or physics/maths combination.

Thirty four percent of those surveyed were educated to post graduate level having undertaken a graduate diploma or masters in environmental science, environmental chemistry, environmental impact assessment and environmental analytical chemistry.

The most useful units were identified as environmental planning, environmental impact assessment, environmental economics, environmental law, geography and maths. So short courses or work experience opportunities that enable you to develop this knowledge would be advantageous.

### ***Salary and openings***

The biggest employer of EIA professionals is the government. At federal level they are employed to develop EIA policy, guidelines and laws as well as advise Ministers on major developments of national significance or those that may have a significant impact on a matter protected by the Environment Protection and Biodiversity Conservation Act 1999 (EPBC). This includes implementing strategic assessments that allow for a 'whole of government' approach to assessing environmental impacts under a policy, plan or program; managing conservation agreements; managing bilateral agreements; and supporting bioregional planning. So the opportunities are diverse with the potential to move and develop new experience and skills. Similar opportunities exist at state government level. Professionals working for local government deal more with the pure assessment of, and case building for (or against), local projects and activities. These include the strategic planning (through land use zoning and statutory regulations) and development control through consent powers and enforcement activities (development consent conditions, taking action over unauthorized land uses for example). Positions in government can therefore be both proactive and reactive focused.

Twenty two percent of those surveyed worked for a private business or consultancy. All of these would physically work for other organisations, including government bodies, departments and private companies. The majority would have a reactive EIA role, where they are assessing the impact of a project or activity, rather than developing strategies and guidelines.

Commonly the organisations respondents worked for included Arup Pty Ltd, Analytical Services Tasmania, Department of Environment and Conservation, Office of the Environmental Protection Authority

Of those surveyed 50% earned \$51k - \$75k and 38% earned \$76k - \$100k.

### ***The personal touch – hear from the environmental impact assessment professionals....***

As with environmental consultancy work, having an environmental qualification and strong specific environmental skills is essential in securing work within this sector. Having work experience in both the government and private sectors is also desirable for career development. Due to the nature of the work, where you are working for the environment through a third party, having environmental skills and experience is really only half the story. People and business skills are also vital. You need to either study units in or gain work experience in areas such as communications, physiology, and economics. Existing environment degrees generally don't contain these subjects. So undertaking research in these fields as part of your bachelor will not only develop your research skills, but develop your communication and information collation skills too, which are essential to EIA roles. Once you have gained these skills you need to become very competent at promoting them. Other areas in which to develop yourself is the ability to identify and solve complex problems and concise report writing.



### ***The sectors future***

This sector has been affected by the economic crisis as work from environmental consultants dealing with private companies has slowed down. Although no one reported redundancies several mentioned budgets cuts and reductions in staff facilities such as fleet vehicles. EIA professionals and companies dealing with mainly government clients have not really been affected, a few even mentioned that the industry is still booming.

The sector is not without its challenges. To continually assess environmental impacts in an environment that is always changing and with increasing development pressure, is very difficult. So too is keeping abreast of future requirements in environmental analysis and having the equipment and skilled staff to deal with them, especially in the strategic and cumulative impact assessment fields. The result is EIA professionals can find it difficult to attain career satisfaction and personal achievement, and are constantly challenged with the need to manage growing workloads with limited funding. Of those surveyed 45% been in role 6 months to 18 months, suggesting that staff retention is an issue.

Environmental analysis is a growing area with lots of opportunities and varied work. The sector is very well placed to provide strategic advice to government so they can create strong policy that shapes sensitive development in the future. The sector is also well placed to research environmental baselines, which are needed to ensure society is moving in the right direction. However, this is reliant on funding and public pressure. The latter requires the public in making a link between EIA and how it can be used to help shape communities of the future.

### **Career Profile Noise Acoustic Engineer Private Consultancy**

**Salary bracket:** \$125 – \$150K

**Employment Conditions:** Full time, 37 ½ hour a week, flexible working hour and location. Night time noise measurements required. Access to pool car and video conference facilities which enables remote working. Have company laptop and phone.

**What was your initial motivation for undertaking environmental work:**

I was drawn into Acoustics when I started understanding noise planning policies and started studying environmental noise.

**What was your first role in the industry:**

I was an Acoustic consultant with a private company.

**Outline your career path since then:**

I have worked solely within the private industry and moved up the ladder. I've gone from Consultant to Senior Consultant and are now an Associate, leading a group of 10 acoustic consultants. I've moved companies during that time, from one that deals with pure acoustics to a company that is multi disciplinary, dealing a lot more with environmental noise, especially transport specific (car/train/air).

**What are the main activities of your role**

I work with my team to assess major developments or proposed routes in accordance with agency requirements. This involves being able to understand the development plans and how it impacts on flora / fauna / communities / domestic and commercial dwellings and undertaking site visits, writing reports and making recommendations. I also provide advice to government agencies with updating and changing policies.

**What generic skills do you think are essential for working in this role**

Communication skills, both written and spoken are essential. Working for communities and clients means you need to be able to correspond with them in a manner that they can understand. Reports have to be prepared for the audience appropriately. Problem solving is another key skill, more specifically, be able to provide the method of breaking down the problem.

**How much of what you know have you picked up on the job**

About 80% I've picked up on the job. There are very few courses in acoustics, so you do a few noise subjects at university where you can, which gives you a foundation and the principles. You then need to develop and tune your skills on site.

**What are the most interesting aspects of the position**

Dealing with the diverse range of projects and people.

**What hours do you work and how do you manage your workload:**

I work full time, but there are still never enough hours in the day. I pay attention to the squeaky wheel, working on those issues / projects that are important and imminent. I work with a great team, and we work together to get things done. I've learnt to forward projects and delegate work.

**What do you gain personally from the job**

It's great to see your recommendations being implemented, knowing that you have improved a situation and made a difference to an outcome. Often you're representing a community, so it's important for me to make sure the best job is done and achieve a good result for them.

**What advice do you give to someone wanting to pursue your career**

You need a passion for sound, noise and vibration. Most people come into it from the music side of things, but when you explore further into the physics of sound and noise you discover a whole world of acoustics that needs implementing appropriately into the community.

**Environmental sustainability policy, legislation, protection and enforcement sector**

*This chapter is split into a number of sections. For a list of what these are, what they cover and where the information came from please refer to The Careers Introduction.*

This sector prepares, develops, agrees, enforces and updates environmental policy and legislation with the aim to improve the environment and work towards a sustainable future. It includes environmental policies aimed at improving environmental performances of major industries, small to medium sizes business and the government at all levels. It also regulates households, where possible, to be more sustainable. The sector works to improve both existing and new developments, practices and systems, so involves new legislation and 'retro fitting' legislation.

The policy development side of the sector involves bringing an environmental issue forward, researching and analysing potential impacts, identifying mitigating actions and designing policy to achieve those actions. The enforcement side of the sector is involved with ensuring compliance with the law, recording reports of breaches and undertaking environmental crime investigations.

Government at all levels are involved in environmental policy and legislation development. The Australian Government of Environment, Water, Heritage and Arts deals with the development or environmental policy and legislation at a national level on issues relating to environmental protection, resource management and sustainability. State government departments and agencies are responsible for the development, implementation, enforcement of policy and legislation at a state level.

Other facets to the sector include capacity building, helping people and communities to understand and use the law to protect the environment, providing scientific evidence to backup new legislation and modeling (environmental, social and economic) scenarios of various policy options to assess potential impacts of legislation. Policy shapes legislation, fines, taxes and other financial incentives which are an essential component to behavior change.

Fifteen percent of the survey respondents worked in environmental sustainability policy, legislation, protection and enforcement sector. This chapter refers exclusively to this sector. A snap shot reveals that 27% of them are aged 41 and over, the rest are evenly distributed throughout the categories 23 – 30 years old, 31 – 35 years old and 36 – 41 old years. Fifty seven percent are female and 39% of them have been in the environmental industry for 5 -10 years.

**Typical job titles**

Compliance and Enforcement Officer  
Communications Officer  
Development Officer  
Environmental Assessing Officer  
Environmental Impact Analyst  
Environmental Lawyer  
Environmental Officer

Environmental Planner  
Environmental Policy Officer  
Environmental Protection Officer  
Executive Director  
GIS Analyst  
Landfill Specialist  
Lawyer

Legal Administrator  
Legal Officer  
Legal Project Officer  
Manager  
Project Manager  
Publications Officer

Scientific Officer  
Senior Forest Investigator  
Senior Planner - Parks and Wildlife  
Senior Policy Advisor  
Solicitor

### ***Main activity of the roles***

- provide legal advice and support the environmental protection authority
- analyse and approve/refuse applications to satisfy conditions of ministerial statements
- develop policy ideas, draft standards, guidelines and other legislative solutions for environmental problems
- translate environmental policy into legislation
- write ministerial briefings and correspondence and commenting on cabinet submissions
- review and critically analyse legal and policy documents, environmental impact assessment reports and environmental management plans.
- co-ordinate consultation with stakeholders and communities
- assist the implementation and audit of guidelines, standards, and policies
- provide recommendations and write environmental permit conditions and issue licenses
- provide legal advice for complex issues
- deal with complaints and enquiries
- conduct investigations into, and collect evidence against, environmental regulatory breaches / pollution events
- undertake environmental intelligence analysis
- enforce environmental legislation and produce Environmental Protection Notices
- deliver community legal education talks and initiatives
- provide legal assistance to communities and develop casework
- create written communication and publications
- manage a small organisation - budget; staff; volunteers; work production; office systems
- mentor and guide peers

### ***Education and skills***

Skills and education for a career in this sector should be related to the specific area in which the you want to work (i.e. water, waste, transport) However, the top generic skills were identified as:

- communication – written
- communication - spoken/verbal
- judgment and decision making
- critical thinking
- identifying complex problems and provide solutions
- honesty

The top environmental specific skills or attributes were identified as:

- a background in specific scientific research and knowledge
- ability to read legislation and decipher technical and scientific data
- strong research skills
- experience in writing scientific reports
- appreciation for the value of environmental assets
- basic understanding of ecological systems (hydrology, geology, biodiversity, botany, landscape ecology), environmental issues (climate change, biodiversity loss,) and impacts of pollution
- basic understanding of, and ability to interpret, environmental law, policy and regulation (climate change policy, ISO14001)
- knowledge of the legal system, both federal and state and how they are related
- experience in policy making and administration
- experience in enforcement of environmental legislation
- environmental licensing knowledge
- specialist knowledge in an industry (i.e. mining, agriculture, manufacturing)
- specialist knowledge in environmental discipline (energy, water, waste, biodiversity)

- field work experience including safety and sampling
- ability to think broadly and strategically
- community engagement experience
- compliance and auditing experience
- an environmental science degree
- experience in environmental conflict resolution

Professionals entering this sector have either studied a specific environmental area in which they wish to work (e.g. marine biology), or studied a broad based environmental qualification. This base could be technical (science or engineering degree) or non technical (political science, law, arts, humanities, environmental management). You need versatility to succeed in this sector. So a broad environmental qualification and work experience background, alongside an area of specialism, is a good basis. The technical understanding of the issues related to the area of work assists successful career development in this sector. Also understanding of legislative practices and processes at federal and state level are highly important and instrumental. Other skills required are research and analytical skills, strong facilitation and communication skills, so short courses that develop these abilities are highly regarded.

Seventy one percent of respondents had studied an environmental qualification, commonly in environmental science, environmental management, sciences (biology and ecology) and environmental law. Half were educated to a degree level and 4% to TAFE level.

Post graduate qualifications are very popular and highly regarded, with 46% of respondents having completed a masters, graduate diploma, graduate certificate or PhD. The specialisations include environmental management, environmental law, environmental studies and systems analysis.

### ***Salary and openings***

Due to the nature of the work the vast majority of opportunities lie within government. A snapshot of the respondents shows that 91% worked for government, 7% for a not for profit organisation and 2% for a corporate or business.

As mentioned, the positions within government department and agencies are involved in the preparation, development, agreement, enforcement and amendments of environmental policy and legislation. Opportunities in not for profit organisations, professional and industry associations are involved with influencing policy formation and content. These organisations conduct research, instigate public awareness campaigns, campaign and lobby government departments, prepare reports and submissions.

Commonly the organisations respondents worked for included the Department of Environmental, Climate Change and Water (NSW), the Department of Environment and Heritage (SA), the Department of Environment and Conservation (WA), the Department of Primary Industries, Parks, Water and Environment (Tasmania), the Department of Sustainability and Environment (VIC), the Department of Environment and Resource Management (QLD), the Environment Division of Tasmanian public service, NT Parks and Wildlife Service, Sustainability Victoria, Environment Protection Authorities, Environmental Defender's Office and local councils such as City of Mount Gambier.

Salary in this industry is average and in line with other sectors within the environmental industry. Of those surveyed 64% earned \$51k - \$75k and 29% earned \$76k - \$100k.

### ***The personal touch – hear from the environmental sustainability policy, legislation, protection and enforcement professionals....***

The world desperately needs more law professionals. And this sector has endless opportunities that can be molded into what ever direction you want to take. General career experience and an environmental qualification are key to securing opportunities. Research suggests that a wide range of experience in a range of roles and sectors is essential in developing an understanding of the sector. However you need to be clear on what area within environment you want to work and be passionate and driven in that goal.

As with other sectors it's just as important who you know, as is what you know, so you really need to get out there. When trying to secure your first role you need to be very proactive. Respondents suggested

approaching organisations to do work experience. You need to choose these experiences carefully so you gain the experience you need as well as create a network of people who may be able to help you later on. Other ways that have worked include joining green groups (Green Up, Green Drinks etc) joining membership associations (EIANZ etc) and attending events and talks at universities, local councils and business associations to get well versed in what's happening in the environmental industry and to network. Don't assume you have to be a perfect fit for a certain role, but ensure you stand out by:

- clarifying your success in analysis, complex problem solving, investigation, negotiation, project management and delivering successful outcomes.
- being honest. Honesty is critical, there is quite an ethical element to these roles and this trait is highly desired, especially in government.
- learning to write clearly and succinctly
- being politically savvy
- being persistent and showing lots of enthusiasm
- being prepared to start at the bottom and work your way up
- not discounting the government recruitment intakes

To be successful you should look to:

- gain experience in similar roles within both industry and government.
- get experience in pollution response type activities
- learn public speaking so you can present confidently
- be willing to learn
- show initiative and provide solutions, not problems
- ask questions - think critically
- be prepared to compromise your environmental ideals as achieving sustainable development is about protecting both the environment and the economy.

### ***The sector's future***

The environmental sustainability policy, legislation, protection and enforcement sector has been affected slightly by the economic crisis. It has seen lower levels of participation in businesses investing in programs and communities taking part in programs. However, there has been a greater focus on delivering sustainable business tools that also support economic growth. Reduction in budget allocations has meant recruitment restrictions, contract staff being let go and staff being encouraged to work reduced hours.

One of the key challenges this sector faces is the situation where there is increasing regulatory burden that can not be properly implemented, supported or enforced. New policies require a budget, which is often smaller than what is necessary. From the industry side, the more regulations there are, the more confused and despondent business's become with being compliant. As with other sectors, finding people with the necessary technical skills is a challenge. Retaining and developing staff is also an issue. Without training and time to research, policy staff find it difficult to keep up to date with legislations themselves (carbon issues/ legislation changes) and advancements in technology. Knowledge of both is essential when developing new policy and legislation. But by far the biggest challenge in retention is the changing of governments and policy priorities. This can make policy and legal careers within government very frustrating. Having said that is a vibrant industry which will be increasing in prominence and variety. With improvements and uptake of new technology there will be increased opportunities to catch environmental offenders.



## **Career Profile**

### **Co-ordinating Solicitor with a Community Legal Centre specialising in public interest Environmental Law.**

**Salary bracket:** \$50K-\$60K

**Employment Conditions:** Part-time, three days a week, flexible working hours.

**What was your initial motivation for undertaking environmental work:**

In part, I was looking for a flexible role to fit around my family responsibilities and at the same time I was presented with the opportunity to work in an area which had interested me for a long time.

**What was your first role in the industry:**

This is my first role in the environmental field.

**Outline your career path:**

I have worked as a lawyer for over 20 years initially in private law firms. In the mid 1990s the opportunity came up to work in the community legal centre sector where I have been ever since.

**What are the main activities of your role**

I have the overall responsibility for co-ordinating the service. My other roles include providing legal advice and assistance to individuals, community groups and conservation organisations on a wide range of environmental law issues. Such assistance sometimes involves court representation. I also engage in community legal education and law and policy reform activities.

**What generic skills do you think are essential for working in this role**

Communication skills and the ability to work in a small team are essential skills. Having good time management skills is also very useful but also being realistic and realising that you can't necessarily meet all demands on your time. Specific legal skills such as advocacy and problem solving are also required.

**How much of what you know have you picked up on the job**

I have learnt about environmental law on the job but have brought many years of legal skills learnt elsewhere to the position.

**What are the most interesting aspects of the position**

Working with clients and colleagues (both staff and volunteers) who are passionate about what they do.

Environmental law is an interesting, dynamic and of course topical area to practice in.

**What hours do you work and how do you manage your workload:**

I work 21 hours a week. I have learnt to be realistic about what can be achieved, to delegate and to make the best use of volunteers and other pro bono opportunities.

**What do you gain personally from the job**

This role is the realisation of a long term interest. The ability to work in such a dynamic area and with people who are passionate about the environment is fantastic. It is very satisfying to empower people in their quest to achieve good outcomes for their community and the environment.

**What advice do you give to someone wanting to pursue your career**

The planet needs more environmental lawyers. I would encourage law students to think about working in this area and not just focus on the traditional areas of practice. I would also strongly urge students to volunteer within the community legal centre network during their studies if at all possible.

## **Environmental sustainability research and development sector**

*This chapter is split into a number of sections. For a list of what these are, what they cover and where the information came from please refer to The Careers Introduction.*

This sector includes professionals that support, undertake and promote scientific and technical research that advances both the knowledge of the environment and its systems. It also includes research that identifies technology that can be used to develop new products, services and methods that produce long term environmental benefits.

Research and development roles exist in both public and private organisations, such as private research centres, academic institutions, consultancy firms, government departments and private businesses. The scope of the research is really broad. It can include research into areas of social change for sustainability, business resource efficiency, commercial fishing methods, littering habits, water wastage patterns and pest species.

Most of the organisations above undertake the research themselves. However state and local government commission research to other consultancies and organisations who implement and evaluate sustainability issues and projects under their responsibility. So research roles within government can involve co-ordinating contractors.

Two percent of the survey respondents worked in environmental sustainability research and development. This chapter refers exclusively to this sector. A snap shot of who they are reveals that 66% are aged 41 and over and 83% are female. They have worked within the sector for a few and many years, so contained both experienced and new professionals.

### ***Typical job titles***

Environmental Liaison Officer  
Environmental Officer  
Environmental Scientist  
Project Officer  
Research Assistant  
Research Associate  
Research Economist

Research Fellow  
Research Officer  
Scientist  
Senior Policy Officer  
Soil Systems Analyst  
Sustainability Officer

### ***Main activity of the roles***

- attend conferences and networking events
- organise events and facilitate workshops
- liaise with all stakeholders
- network with other organisations involved in business area
- research project design and development
- write research project funding applications
- report and policy writing
- research and analyse best practice methods
- spatial development, analysis and management
- corporate governance of social and environmental issues
- economic research and analysis of different policy areas (water for example)
- dissemination of findings to other local authorities
- produce resources and publications, such as case studies and newsletters
- staff and community engagement

### ***Education and skills***

Within the environmental sustainability research and development sector the top generic skills were identified as:

- communication - spoken/verbal
- critical thinking
- judgment and decision making
- communication – written

The top environmental specific skills or attributes were identified as:

- broad sustainability issue knowledge
- knowledge of sustainable development
- exposure to real life problems with local authorities and business
- generic research skills and training
- sustainability networks
- experience in behavior change programs
- expert knowledge in specialist area (i.e. natural resource management, carbon management)
- research skills that are aligned with specialist area
- sustainability project management skills

There is no subject specific training required to be an environmental researcher. Research is conducted into all areas for which environmental work is undertaken. Professionals in this sector therefore come

from a diverse range of backgrounds. Entry to the occupation is usually through a degree, commonly in science (ecology, biology, earth) environmental science, environmental studies, environmental education and sustainable development and planning.

The research showed that an honours year was essential to develop research skills and prove the ability to undertake longer research project. Further research skills are gained through the completion of masters degrees and PhDs. Unsurprisingly, 60% of respondents were educated to post graduate level. Again the subject of study varied greatly depending on the area in which they wanted to pursue a career. Post graduate qualifications included eco-tourism, sustainable development, ecological footprinting and environmental cognition and education. Research showed that general post graduate study in the following to be very useful; project management; sustainable development; research methods and statistics.

### ***Salary and openings***

Opportunities in environmental research and development exist in government departments and agencies, universities, consultancy firms, private businesses and research centres. Practitioners undertake research into all aspects of environment work. Research is undertaken into pollution prevention, environmental protection, resource conservation, policy implementation and assessment, sustainable processes and product development.

Of those responding to the survey, 60% worked for government department or agency, 20% for a not for profit organisation and 20% for academia. According to Department of Education, Employment and Workplace Relations (DEEWR), the property and business services employs about one third of environmental researchers (DEEWR 2008). Commonly the organisations respondents worked for included local government, BREW Centre for Local Authorities, OceanWatch Australia Ltd, and RMIT University

The most common earning bracket for professionals in this sector was \$51k - \$75k

### ***The personal touch – hear from the environmental sustainability research and development professionals....***

To get into this sector respondents suggested the following routes:

- pursue your environmental/sustainability related goal in the role you are currently in as a first step
- taking a job in the waste, climate change, sustainability, resource efficiency within local government is a great way to gain better understanding of the problems local authorities face in implementing sustainability, which are the key to the roll out of national and state programs
- be a generalist, and be able adapt to any situation and absorb the information you are being given.

To succeed in this sector, respondents acknowledged the importance to take every opportunity to communicate your successes, no matter how small, and share your learning's by applying for awards and attending conferences. Environmental research is often a process with no end point, just more research, so it is important to acknowledge the wins, to keep up motivation.

### ***The sector's future***

This sector has been affected by the economic downturn, mainly in terms of reduced staff. Positions have not been replaced once they become vacant, contract positions not being renewed and maternity leave positions not advertised. Generally there has been less positions available. With funding cuts to projects, many organisations have been running the grant race, where the majority of their time has been taken up applying for grants rather than actually doing the research work.

As with other sectors, this one has its own set of challenges and opportunities. The biggest by far is having long term funding to implement sustainability projects and undertake research. Short term project funding is inefficient in terms of the use of resources and actual project 'up time'. Other challenges that are apparent is putting a dollar value on the environment and environmental work (such as environmental education). This is an issue for a large section of the research sector when quantifying results. It's also an issue for the industry as a whole. Another broad research challenge is the need to

identify methods in which sustainability can be incorporated effectively into every day systems, processes and plans (i.e. council plans). The size of the challenge varies greatly with the different areas of research.

### **Career Profile Program Manager for State Government**

**Salary bracket:** \$60K – \$75K

**Employment Conditions:** Public Service Award. Full time. Flexible working hours

**What was your initial motivation for undertaking environmental work:**

I studied one of the first environmental courses to be offered, the Fuel Utilisation course, and entered the work force just after the 1970's oil crisis. I was brought up with using everything and not wasting anything. This idea of hating waste stuck with me through my engineering course.

**What was your first role in the industry:**

I was an Engineer with the Commonwealth Explosives Factory in 1978.

**Outline your career path since then:**

I have had a number of varied roles within the industry. The first step was to a Process Engineer where I processed commissioning (including supervision of Contractors) and improvement, investigation of current safety procedures. I've worked as an Energy Engineer establishing an energy management system to accurately determine energy consumption within pharmaceutical, polyethylene and polypropylene plants. I've also worked within the water industry as a trainer, where I trained engineering staff in the safe and effective operation of a major water recycling plant.

**What are the main activities of your role:**

Assessing sustainable projects that fit the criteria of the current government programs to look at funding assistance to support a robust business case.

**What generic skills do you think are essential for working in this role:**

Presentations, coaching, training, project management, web search techniques and excel expertise.

**How much of what you know have you picked up on the job:**

Tricky question as I have been working for 30 years. At least 80% of what I do know I have learnt on the job.

**What are the most interesting aspects of the position:**

Keeping up to date with technology and it's impact on sustainability.

**What hours do you work and how do you manage your workload:**

Hours are generally office hours (0800-1730). I manage my work load through a daily priority setting plan.

**What do you gain personally from the job:**

Being able to influence the project scope to achieve a better sustainable outcome. This comes about through funding and being able to connect the right people at the right time.

**What advice do you give to someone wanting to pursue your career:**

Work in private business in a technical role for at least 10 years. This does not necessary include a consulting business.

### **Green building design and construction sector**

*This chapter is split into a number of sections. For a list of what these are, what they cover and where the information came from please refer to The Careers Introduction.*

The green building design and construction sector is a rapidly changing one. What was once a small stand alone boutique industry is now a fast growing multi billion dollar sector. The main reason behind this growth is a shift towards re-orientating existing construction jobs and trades after the recognition that the construction industry plays a huge role in carbon emissions. The building industry accounts for up to 23 % of Australia's greenhouse gas emissions.(Australian Sustainable Built Environment Council 2007). The growth of this sector, and the demand for new green skills in it, is set to continue, with the roll out of new policy. The Council of Australian Governments (COAG) has recently stated that it will require a minimum six star energy efficiency rating for residential homes and commercial properties built after May 2011. New policy such as this has created new emerging professions, such as Home Sustainability Assessors. CSIRO, the Dusseldorp Skills Forum and the Australian Conservation Foundation research found that in order to make deep cuts in Australia's greenhouse gas emissions, it will be essential to

identify and provide the green skills needed by the 3.25 million workers in industries that currently have 'high environmental impacts' Construction is one of the industries detailed.

Professionals in this sector are involved with sustainability concern in

- the design of individual buildings (reducing environmental impact in the design; in the materials used; and the subsequent performance of that building with resources used. E.g. energy and water)
- the built development space (designation of open space, wild areas, stormwater collection etc)
- the actual construction methods (sustainable building techniques and practices).

In terms of sustainability, the sector has environmental professionals with construction knowledge and skills and construction professionals with sustainability skills and training. The former includes professionals who play a number of roles in the development of the industry, such as the development of tools which help people design more sustainable buildings and the development of green construction products and materials. Recycled roofing and energy-efficient heating systems are an example of this. The latter includes professionals such as engineers, contractors, consultants architects, designers, builders and tradespeople who have developed new methods of practice that are more sustainable. The plumbing trade is at the forefront of changing working practices, with a purpose built training centre, it's own professional association and trade certification. Other trades are set to follow as the industry places more emphasis on sustainable design and practices, due to increased regulation and enforcement.

Work in this sector has been mainly with the design and construction of residential properties, but is increasingly getting more involved with the construction of retail and office spaces, public buildings, schools and healthcare buildings, as the health and cost benefits of sustainable buildings are realised and new legislation and policy has been introduced. This work involves new build, upgrades and renovations. Most of the existing sustainable construction regulation deals with new build and major upgrades. Renovation works have been initiated through fiscal measures, that of financial incentives (low green loan rates) and rebate schemes.

There are a number of different star rating systems in Australia that evaluate the environmental design and construction of buildings. Some concentrate on specific areas, i.e. energy design, whilst some focus on building type (i.e. homes / offices). They are at present all voluntary environmental rating systems, but this is set to change in the near future. The most recent development at the time of writing was the Green Building Council of Australia (GBCA) launching a new national framework for sustainable communities.

Two percent of the survey respondents worked in green building design and construction sector. This chapter refers exclusively to this sector. A snap shot shows that 50% of them are aged between 31 – 35 years old and that 67% are female. This sector has a higher percentage of people who are relatively new to the industry. A third have been in the industry for 1 – 2 years, but conversely a high percent of professionals have been in the industry for 15 years or more.

### ***Typical job titles***

Building Designer  
Building Thermal Performance Assessor  
Ecologically Sustainable Development (ESD)  
Engineer  
Environmental Officer  
Green Plumber  
Grey Water System Installer  
Home Sustainability Assessor

Industrial Product Designer  
Lecturer  
Project Manager  
Sustainability Architect  
Sustainability Manager  
Water Conservation Designer

### ***Main activity of the roles***

- advise council officers on Ecologically Sustainable Design (ESD) technologies, design and construction issues and how they can achieve ESD outcomes through the planning scheme
- advise residents on energy and water efficiency in their homes
- assess building design



- undertake building thermal performance assessments
- review the residential planning application tool and organise changes
- manage energy efficiency and alternative energy housing projects
- undertake environmental management system reporting
- prepare and deliver lectures on green build units
- make suggestions for change to proposed plans
- be the media contact or spokesperson for the organisation
- assist with policy development
- project development
- provide technical software help
- undertake sustainability reporting
- design housing developments using ESD principles (i.e. water sensitive urban design)
- write reports to council and others on progress of Ecologically Sustainable Design in council area

### ***Education and skills***

The top generic skills were identified as:

- communication - spoken/verbal
- communication - customer service
- negotiation / persuasion / build argument
- identifying complex problems and providing solutions

The top environmental specific skills or attributes were identified as:

- being able to apply your knowledge of the environment to advice on necessary changes to a company's strategy
- being able to break down complex information and problems into steps that add value to an organisation
- ability to undertake Building Thermal Performance Assessment
- need good technical basis as a background, so knowledge of building design for sustainability (energy, water etc); knowledge of green building programs; knowledge of, and experience with, different programs, tools and products ( HERS Home energy rating software, water saving systems) are essential
- dedication to environmental outcomes whilst understanding the concerns of others
- knowledge of environmental issues, resulting legislation, guidelines and policies and the impacts this has on domestic and commercial buildings
- knowledge of the emerging profession of Home Sustainability Assessment
- sustainable energy qualification
- knowledge of local government and planning systems
- quantitative and technical analysis skills

As previously mentioned, in terms of environmental professionals in this sector, there are two distinct sets: environmental professionals with construction knowledge and skills and construction professionals with sustainability skills and training. All of our respondents said that their education is fundamental to their role, but only 50% of them have studied an environmental focussed course. The most common undergraduate courses were degrees in environmental engineering and environmental management. This sector had the highest level of professionals educated to a TAFE level (22%), with them having studied general construction, off site construction, plumbing technology, architectural technology and building studies. It's a very practical hands on sector, which requires practical hands on training, so look for courses that provide opportunities to develop skills through projects, work placements and hands on experiences.

A large percentage (66%) had studied to a post graduate level, having studied diplomas, masters in disciplines such as building design and technology and sustainable energy. Many have undertaken Greenstar Accreditation, FirstRate Accreditation training and certificate IV in training and assessment.

### ***Salary and openings***

Opportunities in this sector lie mainly within government, private businesses and corporations. There are research opportunities in academia and relatively few openings in not for profit organisations.

Roles of the professionals in this sector range from the design of individual buildings (architects); development of new materials; modeling and assessing building performance (sustainability assessors); the design of community and open spaces; the design and build of infrastructure (cycle paths, train stations, storm water collection and grey water cleaning and recycling for example) and the development of new sustainable building techniques and practices. Roles are therefore linked to other sectors (such as water conservation), creating potential career pathways both into and out of the sector. Generally, the majority of environmental professionals in the sector, who have environmental qualification (mainly environmental engineering) tend to move into building design and project management side of the sector. Others provide consultancy services, develop new building products and practices and work to promote and sell these.

Due to the diversity and size of the sector, it's difficult to provide any in depth information about openings in the sector. However there are several good industry bodies that can be contacted to find specific and detailed information on the sector and its careers: Green Building Council Australia, Australian Sustainable Built Environment Council and the Association of Building Sustainability Assessors. The Master Builders Association has created the Green Living Program.

Commonly the organisations respondents worked for included government organisations such as Sustainability Victoria, Moreland City Council, private businesses and corporations such as Jones Lang LaSalle, LANDCOM and ecode-signs.

Compared to other sectors within the environmental industry, this sector is fairly well paid. Fifty percent of the respondents earned \$75K - \$100K and 50% earned \$51K - \$75K.

#### ***The personal touch – hear from the green building design and construction professionals....***

Green building knowledge and skills is vital to secure a role in this sector. As too is understanding the building regulation, star ratings, and up and coming green build legislation. Although transferable skills are highly useful, most career changes or moves into the industry will need to be supported with professional studies and training. So you should take advantage of the wealth of short to medium term courses that are available. For those wanting to move more into the sustainability sector from the construction sector, use your existing strengths and experience to make the leap into an organisation that has people dedicated to the environment and sustainable practices, where you can learn, make contacts and have a common direction. A passion for sustainability is important.

#### ***The sector's future***

The sector has been affected by the economic downturn in a number of ways. The overall effect on the construction industry has rippled out in to the green building design and construction sector, with reduced level of work created by less people wanting to buy new homes or renovate existing homes. Developers have become more risk averse. Unfortunately ESD costs are still seen as an added risk to many developers so they have been less willing to include these voluntary elements into projects, doing just the minimum required. Many have gone back to the bare bones basics of energy management to sell the 'save money' aspects of the development.

This sector faces a distinct set of challenges not really felt in other sectors of the industry. It's seriously effected by house prices, which in turn, are affected by increased regulations, such as increased energy efficiency ratings and mandatory disclosure laws for all residential buildings (energy, greenhouse and water performance at the time of sale or lease). This creates a situation where it could be victim of its own success, but then it could also be a victim of success. What is clear, is that more needs to be done to upgrade and retro fit existing buildings to improve sustainability performance. But with little investment in this policy area, little action will be seen in the near future.

Another challenge for this sector is the upskilling and education of the development industry to embrace emerging opportunities for sustainable design. But interest in green build is gaining pace and consumers demands are changing to want more sensitive design. As developers come on board, the need to educate will flow out to designers and builders, and finally create a demand for green building trades. Great work has been done with a few trades (i.e. plumbing) but this now needs to be used as a best

practice model and rolled out through other areas of the sector. The good news with this sector is that it's all there. It just needs the momentum and the investment.

### **Career Profile Emissions Auditor at Private Company**

**Salary bracket:** \$51K - \$75K

**Employment Conditions:** Full time, laptop provided and flexible working arrangements in terms of hours and location.

**What was your initial motivation for undertaking environmental work:**

I was always interested in animals so naturally followed that when it came to study. I did a degree in ecology and did modules that covered other subjects within the environmental discipline.

**What was your first role in the industry:**

My first role was a volunteer role. I was involved with a revegetation project and also had a volunteer role doing home energy audits.

**Outline your career path:**

Following my volunteer roles I took on some contract administration positions with other organisations, both private and government agencies. This gave me the experience and knowledge about the sector which I needed to get an environmental position.

**What are the main activities of your role:**

Calculations and reports on greenhouse emissions for businesses

Site visits to undertake energy audits at businesses

Analysing audit results

**What generic skills do you think are essential for working in this role:**

Definitely good communication skills and the ability to use excel and other main computer packages well. The ability to write reports and other such document is also essential.

**How much of what you know have you picked up on the job:**

Most of what I know I have picked up on the job. When I started the role I did one weeks worth of in-house training, which involved a lot of shadowing and mentoring. I've learnt a lot by asking questions.

**What are the most interesting aspects of the position:**

It's flexibility. I also enjoy doing energy audits and meeting a range of very different people. Some people are very interested in the whole reduction of emissions, whereas others aren't, but do it because they need to. The contrast is interesting.

**What hours do you work and how do you manage your workload:**

I work 40 hours a week generally. However I do overtime as the nature of the job requires it. My workload is heavily effected by data collection and analysis, so I work alot when the statistics are in and take some time off when it's quieter.

**What do you gain personally from the job:**

I work for a good company and I feel that I am making a difference. I am contributing to both the well being of the environment in which we live but also to the development of a young company. I have had input into product development as well as in house policies (EG staff engagement package) which is good experience and very interesting.

**What advice do you give to someone wanting to pursue your career:**

Do lots of volunteer work and make the networks in the industry in which you want to get into.

## **Land management, quality, protection and site restoration sector**

*This chapter is split into a number of sections. For a list of what these are, what they cover and where the information came from please refer to The Careers Introduction.*

The land management, quality, protection and site restoration sector includes jobs that are related to the protection of land quality and the restoration of contaminated land. Having healthy land is essential for healthy water flows, natural ecosystems and food production. It involves dealing with environmental issues, that of land erosion and salinity, which cause the loss of vegetation cover, turbidity and contamination of waterways, ecosystem imbalance, and biodiversity loss. Erosion is caused predominately by land clearing, but is also a natural process. Salinity is caused by bush clearance and

inappropriate irrigation practices. Both are caused from past and current activities and both are a major issue for Australia.

Professionals working in this sector are involved in the research, control and prevention of degradation of land quality. This involves investigating the potential risk to human health and the environment from contamination; managing and mitigating the risks of contaminated land; sustainable management of rural lands; sustainable agricultural practices; addressing land degradation issues such as weeds, pest animals, water quality, riparian zones, soil quality; protecting sites of significant environmental value; being involved in large scale landscape rehabilitation. The roles are varied, challenging, innovative, and mostly, outside.

Five percent of the survey respondents worked in land management, quality, protection and site restoration sector. This chapter refers exclusively to this sector. As a snapshot, 29% of them were aged between 26 – 30 years old, with the rest fairly evenly distributed across the ages. They are mature and experienced workers, with 29% having worked in the industry for 5 – 10 years and 29% worked in industry for 10 – 15 years.

### ***Typical job titles***

Associate Environmental Geologist  
Auditor  
Biologist  
Bush Crew Worker  
Chemist  
Community Affairs Officer  
Decontamination Officer  
Environmental Scientist  
Field Technician  
Geologist  
Hydrogeologist

Irrigation Officer  
Laboratory Technician  
Landcare Community Support Officer  
Natural Resources Officer  
Project Manager  
Project Officer  
Regenerator  
Remediation Officer  
Research Officer  
Rural Programs Officer  
Soil Systems Analyst

### ***Main activity of the roles***

- co-ordinate bush regeneration activities
- communicate environmental compliance requirements
- community consultation on environmental issues i.e. meetings, workshops, volunteer co-ordination
- critical evaluation of information and data
- define project objectives and monitor progress
- develop business, prepare quotes, tenders and application to government programs
- provide education and advice on managing biodiversity on farms for farmers
- provide education and advice on managing land degradation issues on rural lands for farmers
- review land management agreements (LMA) for managing land degradation and biodiversity issues
- engagement of new volunteers into Landcare activities
- land erosion prevention activities
- groundwater/soil/gas monitoring
- fire management and prevention works
- hire and manage consultants and environmental contractors
- GIS and computer modelling
- plant identification activities
- plant native species
- project management
- provide strategies for obtaining approvals
- regulation of contaminated sites
- review investigation and remediation reports for contaminated sites
- undertake risk assessment on site, field and personal safety
- carry out site inspections
- skills and capacity building training for community members
- mentor and manage staff and work teams

- translate technical advice to client project managers
- weed management and eradication (herbicide application)

### ***Education and skills***

Many of the roles in land quality protection are technical, practical and hands on, so require significant technical ability and knowledge. The top generic skills were identified as:

- communication – written
- communication - spoken/verbal
- identifying complex problems and providing solutions
- initiative and enterprise

The top environmental specific skills or attributes were identified as:

- basic knowledge of environmental systems (geology/hydrogeology/soil science), ecology principles and human uses of land(horticulture, natural resource management)
- strategic bush regeneration techniques
- contaminated land knowledge and experience
- experience and knowledge in working on biodiversity management and land degradation issues on rural lands.
- experience and knowledge in working with rural landholders on addressing land degradation and biodiversity issues on farms.
- field based skills
- fire management knowledge and skills
- GIS mapping and spatial analysis
- use of hazardous materials (chemicals) and certified occupational hygiene
- indigenous and weed / plant species identification and interpretation skills
- weed management and treatment techniques
- knowledge of toxicology and chemicals in the environment
- knowledge of current sustainable practices and environmental legislation
- risk communication and translation of environmental cost
- understanding the land development and planning process/system

Seventy percent of those responding had an environmental focussed qualification. For professionals involved in site assessment and analysis, qualification in environmental science, geology, applied geology and chemistry are common. For professionals involved in land rehabilitation and restorations degrees in engineering (civil/environmental/agricultural) and environmental science were common. Additionally, these qualifications combined with conservation, ecology, horticulture, geography, economics can be seen favourably. Double degrees in science and engineering are desirable. Fifty three percent of the respondents were educated to a degree level.

TAFE is a great way to gain necessary skills and knowledge in conservation. Twelve percent of the respondents were educated to a TAFE level, having studied a diploma conservation and land management, land management or horticulture.

Post graduate is not essential for entry into this sector, but is advantageous for career progression. Thirty five percent had studied to a post graduate level, studying masters and post graduate certificates in project management and environmental science.

Mapping and GIS skills courses are much more widespread and as a result are more widely utilised. Other specialisations that have been gained through short courses that have proved important include risk management, environmental law and plant identification.

### ***Salary and openings***

Most of the work in this sector is within corporates and businesses, mainly engineering and environmental consultancies. Professionals working for consultancies provide technical services to government and industry, assessing contaminated land and providing advice on remediation and restoration. Just over half of the respondents working in this sector worked for a private business or corporate company.



More opportunities lie within government. The federal departments responsible for land quality are the Department of Agriculture Fisheries and Forestry and the Department of Environmental Water, Heritage and Arts who work together to provide national leadership on issues such as salinity and activities such as sustainable land management. Twenty nine percent of the professionals responding worked for the government.

Roles within not for profit organisations tend to be more involved with revegetation works on both community and private land as well as policy development and campaign work.

Common employers of those surveyed included government departments, Department of Environment, Climate Change and Water (NSW) and ACT Parks, Conservation and Lands, consulting firms including Environmental Earth Sciences, EESI Contracting, Baralga Environmental Services, URS Australia Pty Ltd, LandCorp, Acacia Environmental Services, SKM, Toolijooa Pty Ltd. Not for profit organisations include Greening Australia.

As a guide, professionals working in this sector earned between \$51 - \$75k (41%) \$101 - \$125 K (24%) and \$31k - \$40K (18%). Similarly to the conservation of biodiversity sector, this sector has fairly low paid entry positions.

### ***The personal touch – hear from the land management, quality and protection professionals....***

To be ready to work within this sector you need both a relevant qualification as well as a suite of field and technical skills and experience. It is difficult to learn land regeneration theory without study, and it's difficult to get skills through study alone. One of the best ways to achieve this is to study a course that is very field based, and study to a level appropriate to where you want to be in the sector.

Windows of opportunity are often very narrow, so you need to be well connected and keep up to date with what is on offer. You can achieve this through volunteering. This offers the most valuable networking and skill building opportunities than any other avenue. Others suggest taking advantage of free community training days and forums advertised in your local area. Being proactive and approaching businesses directly can also be fruitful. You will be surprised how many companies respond well to this. Other recommendations from professionals include:

- in the early days of your career, spending some time working within government as this is a great way to develop networks and get an understanding of the systems you have to comply with
- to get on, be confident in problem solving, risk based decision-making and demonstrate a big picture approach
- to remain relevant, you need to add to your wide range of experience and knowledge in several areas (hydrogeology, soil, risk assessment).
- have a healthy knowledge balance of both environmental use and the environment and be realistic when it comes to achieving sustainability

### ***The sector's future***

The economic crisis has affected this sector. The environment is often way down the funding ladder, at all levels of government as well as in the private sector. It's often the first purse string to be tightened when budgets get cut. This has resulted in cost tightening and more work for less staff to do. There has been less private development to assess and monitor, but the government stimulus package has increased work in other areas.

Retraction in federal and state government funding and a reduction in the number of contaminated sites remaining are leading to a contraction in the field. Adapting to new legislative frameworks and risk assessment requirements is making it more difficult to retain trained staff, who get tired of all the regulation and constant changes. Other challenges this sector face includes:

- the need to broaden skill sets and commercial experience in new recruits
- land developers and proponents should have in house environmental assistance but do not have the will to do this

- to return degraded landscapes to functioning ecosystems requires both agriculture knowledge and customer service skills, which are not a natural combination
- roles require a high level of skill and training. However it is relatively low paid sector. So getting and keeping strong candidates and quality graduates is difficult

As the more traditional land quality opportunities decline, new careers avenues through climate change impact on land use are opening up. The introduction of regulations also create new opportunities (Regulation of underground petroleum storage tanks for example) and a working emissions trading scheme could provide the budget to undertake these works and retrain professionals with new specialisations as the sector changes. It is therefore an evolving and expanding sector. The sector will play a key risk assessment role in sustainable growth.

### **Career Profile Records Manager National Park**

**Salary bracket:** \$50K - \$60K

**Employment Conditions:** Full time

**What was your initial motivation for undertaking environmental work:**

Always had a passion for environment, love learning new things and working outdoors. After my Green Corps traineeship, I knew it was the career I wanted to pursue.

**What was your first role in the industry**

Green Corps traineeship Adelaide with Conservation Volunteers Australia (CVA)

**Outline your career path since then:**

Completed Bachelor of Science with honours in Environmental Management. After a year of finding no work, I did a diploma of Geographic Information Systems (GIS). I had a 1 year contract doing GIS work for Local Action Planning groups along the Murray River in SA. Then I moved to work at the Alice Springs Desert Park after that.

**What are the main activities of your role:**

Maintaining plant and animal living collections databases, maintaining GIS data and software, managing GPS mapping and equipment.

**What generic skills do you think are essential for working in this role**

Communication skills to work between very different work groups and external clients; general computer skills e.g. Microsoft Windows and Office software; time management as my position is mostly autonomous. Lots of patience with people who don't see the need for computers

**How much of what you know have you picked up on the job**

Animal and plant identification, and animal handling. Communication skills have grown through working in this job, using differential GPS technology. I'm continually learning new GIS skills

**What are the most interesting aspects of the position**

The varied work, I'm doing something different everyday. Opportunities to learn from other staff. Being able to set my own work priorities means I can learn new things on the job. E.g. new ways of doing things with GIS, or new botanical or zoological information.

**What hours do you work and how do you manage your workload:**

I work 8 hour days. I have a varying work load with priority jobs coming and going so I sometimes have time to focus on more long term projects. I set my own work schedule so I'll prioritise jobs by importance or due date.

**What do you gain personally from the job**

A sense of satisfaction of doing my job well. Facilitating the sharing of knowledge through keeping the databases up to date and training staff in their use. More experience and skills towards furthering my career

**What advice do you give to someone wanting to pursue your career**

Keep persisting. Multi-skilling is important, for example I got my first job after going back to study after completing an Honours to study a diploma in GIS. Don't just rely on your degree to start a career.

## **Natural resource management sector**

*This chapter is split into a number of sections. For a list of what these are, what they cover and where the information came from please refer to The Careers Introduction.*

Australia derives a significant proportion of the nation's wealth from its environmental assets, including agriculture, mining and tourism. Degradation in those assets creates a loss to the both the Australian economy and the welfare of all Australians. To manage the decline in the health of Australia's

landscapes and protect environmental assets, the government acknowledges the need to facilitate sustainable and productive natural resource management and use, to support viable rural communities and to engage Indigenous Australians in these actions (Australian Government Land and Coasts 2010).

Natural Resource Management (NRM), therefore refers to the management of natural resources such as land, water, soil, plants and animals. Natural resource management in terms of this guide refers to industries such as agriculture, fisheries, forestry and mining. It does not include the management of wildlife and habitats, which is dealt in the conservation of biodiversity section, or the protection of land quality and the restoration of contaminated land, which is categorised in the land management, quality, protection and site restoration section. Although eco-tourism is often used as a tool to quantify the value of natural resources, it is not an activity of the sector. Eco tourism is included with in the sustainable living section.

Activities of this sector therefore include the preservation and conservation of fisheries and forest resources, the natural resources in agricultural land and the environmental management of mining operations. Due to the nature of mining, forestry and fisheries, they are often very controversial in terms of environmental employment. Are professional roles in these sectors environmental? Especially when the priority is reducing the impact of a very damaging activity rather than protecting the environment out right? As eluded to in the introduction, what constitutes an environmental profession is subjective an different to each individual. For purposes of this guide, the position taken is that to achieve sustainability we need to improve the extraction, and increase efficient use, of natural resources. Without environmental professionals working in these industries, it is not going to be achieved. They are therefore included.

The NRM sector (agriculture, fisheries, forestry) comes under the jurisdiction of the Australian Government Land and Coasts which is a unique cross-departmental team comprising staff from the Australian government departments of the Environment, Water, Heritage and the Arts; and Agriculture, Fisheries and Forestry. Mining falls under the jurisdiction of Department of Resources, Energy and Tourism. With agriculture, fisheries, forestry and mining all produce resources and products for both the international, as well as the domestic, markets so are effected by the policies and priorities of the Department of Foreign Affairs and Trade who manage international trade and commodity negotiations.

Professionals working in these industries are involved with the protection and sustainable management of ecosystems that are affected by the activity in question. This involves the development, implementation, enforcement of national and state policy and regulations within their company of work, or sometimes within an industry as a whole (i.e. industry association) This requires them to monitor company activities to ensure compliance with environmental regulation and reporting requirements, gathering and monitoring performance against environmental requirements and reporting these to regulatory bodies and the board. Assessing and managing threats and risks to the environment is also a key role.

Working as an environmental professional in the agriculture industry involves working with issues such as drought assistance and sustainable agricultural practices in the production of meat, wool, dairy, wheat, sugar and vegetable crops.

Working as an environmental professional in the fisheries industry, involves implementing domestic and international fisheries regulations and policies, managing activities such as aquaculture, recreational fishing, illegal and unregulated fishing and dealing with environmental problems such as marine pests and the protection of vulnerable or threatened species.

Environmental professionals working in the mining and the forestry industries are usually employed by environmental consultants who are recruited to undertake the work. A few professionals are employed by the industry organisations themselves, those that do work for the larger resource companies. Either way, working for these companies often means working in isolation as the company environmental expert or within a very small environmental team.

Two percent of the survey respondents worked in natural resource management sector. This chapter refers exclusively to this sector. A snap shot of them reveals that 43% are aged 41 and over and 14% are aged under 30. Seventy one percent of them are female and an overwhelming 43% have worked in the environmental industry for 15 years and over. All see themselves as environmental professionals, working in environmental and non environmental organisations.

### ***Typical job titles***

Aquaculture Development Officer	Fisheries Management Officer
Arbourist	Forest Entomologist
Biodiversity Officer	Forest Hydrologist
Biologist	Forest Officer
Civil Engineer	Forestry Technician
Computer Modeller	Limnologist
Consulting Forester	Marine Biologist
Director	Mining Liaison Officer
Environmental Consultant	Natural Resource Management Facilitator
Environmental Impact Analyst	Natural Resource Management Officer
Environmental Protection Officer	Natural Resource Officer
Environmental Resource Manager	Naturalist
Environmental Resource Manager	Project Manager
Environmental Scientist	Project Officer
Farm Forestry Officer	Research Officer
Field Technician	Toxicologist
Fisheries Biologist	

### ***Main activity of the roles***

- administration and record keeping duties
- advocacy work with key stakeholders
- represent organisation and raise awareness by attending discussions and workshops,
- collect seeds, propagate and grow plants
- undertake committee and specialised panel work
- communicate with people conducting ground work
- develop information for website and prepare presentations
- co-ordinate the development and design of publications and resources
- deal with customers
- identify illegal activities, such as clearing, pollution hazard, erosion problems
- identify noxious and environmental weeds
- taking part in industry consultation and liaison
- measure KPIs of staff
- meet with internal and external stakeholders
- Natural Resource Management reporting
- Natural Resource Management policy research and development
- prepare written documents such as reports, incident descriptions, rehabilitation plans
- project management
- scope out and undertake research and broker knowledge
- develop strategic networking and partnerships

### ***Education and skills***

This is a very diverse sector. However the top generic skills were identified as:

- communication – written
- communication - spoken/verbal
- negotiation / persuasion / build argument

The top environmental specific skills or attributes were identified as:

- deep knowledge of local landscape and a national perspective on natural resource management restoration and biodiversity
- experience working on-ground and with industry and the community

- ability to interpret and apply relevant natural resource management legislation and policy
- knowledge of ecological systems (integrated catchment management, hydrology) and extremes events (fire management, flood management)
- knowledge of natural resource management programs, funding structures and reporting requirements
- knowledge of political decision-making processes
- good scientific background, sound scientific knowledge and practice
- database management and spatial information skills (GIS, GPS, mapping and data integration)

Professionals enter this sector mainly through tertiary education, commonly science qualifications (environmental biology, ecology) for opportunities in fisheries, agriculture and forestry. These are the most common straight forward disciplines to undertake as they provide broad based knowledge and good field skills. The combination of this knowledge with the understanding of broader issues of biodiversity, economics, and social science also provides good entry potential into these fields. Specialist degrees in subjects such as conservation biology and marine biology are also highly regarded, but only when they are matched with the industry of focus (i.e. marine biology to fisheries, botany to forestry). Professionals seeking employment within the mining industry should look to engineering and technical qualifications that have strong environmental and NRM content.

Half of those responding had completed postgraduate study to further their career potential, studying NRM, GIS and forest management. Survey respondents consistently stressed the need to acquire field work skills and varied work experience both before and after graduating from university. Interestingly a few had undertaken a TAFE conservation land management or forest management qualification after post graduate education, to gain practical experience in areas they needed to develop.

### ***Salary and openings***

A wide variety of employment opportunities exist in this sector including government departments and agencies, government owned enterprises, research institutions, private companies and not for profit organisations.

The majority of opportunities in federal government lie within the Department of the Environment, Water, Heritage and the Arts, Department of Agriculture, Fisheries and Forestry and Department of Resources, Energy and Tourism. At a state level, professionals should look to the departments that deal with the environment and / or primary industries. These roles deal mainly with the development, implementation and enforcement of policy, which shapes the roles of professionals who are out working in the industries. Of those surveyed 43% worked for a government department or agency.

In the private sector, professionals are hired by companies and consultancies to assess, monitor and report on environmental performance. University research units and research institutions hire professionals to research, assess and advice on the sustainable management of natural resources. To gain a better understanding of ecosystems, they are involved with computer modelling and statistical analysis that identify potential environmental problems, as well as to identify new methods of resource extraction and regulation needed to ensure sustainable management. Professionals working in not for profit organisations are involved in research and campaigning based roles.

Professionals working in this sector work for organisations such as Department of Environment, Water, Heritage and Arts, Department of Agriculture, Fisheries and Forestry. Fisheries Research and Development Corporation, ABARE, CSIRO, Greening Australia, Local Government Associations, The Sydney Rainforest, Vic Forests, Environmental Protection Authority and Local Councils. The most common salary bracket for those working in this sector was \$51k - \$75k (71%).

### ***The personal touch – hear from the natural resource management professionals....***

The sector described above is large and the opportunities are very diverse. Professionals responding in the survey gave several tips on securing working this sector. Many suggested starting in a contract position, as they more than often lead to permanent work. To succeed in the industry you need to keep yourself up to date, so ensure you continue learning every day either on the job or through a course that develops your skills in the way you want your career to go. Many alluded to the importance to keep your



options open, by doing broad qualification initially, then specialising once you have several years experience.

### ***The sector's future***

This sector has been affected by the economic downturn in a number of ways. Budget cuts, reduction in discretionary spending and recruitment freezes have happened in government departments. This hasn't affected long term projects. An indirect impact has been the change in federal governments NRM funding program, which has caused a reduction in job opportunities and resource support for local NRM staff. In addition the mining sector downturn has affected environmental restoration.

The biggest challenge facing this sector is succession planning, with many professionals in the sector being aged 50 to 60 years of age and about to retire. In addition to this there are few opportunities for younger professionals to get into the sector with high skill and education demands on the most basic of positions. Indecisiveness and constant change in federal and state government NRM policy and priorities causes a lot of problems on the ground with projects having started and then being left unsupported.

If enforcement was stronger and all development were under stricter conditions, the amount of funding for bush regenerations and riparian rehabilitation of habitats would be colossal. This would increase job opportunities in both the conservation and natural resource management sectors. It could potentially provide entry opportunities for younger professional wanting to get into the industry. This needs to be done whilst the 'older' generation are still working and can provide mentoring opportunities as well as the development of leadership skills.

## **Sustainability communications and public awareness sector**

*This chapter is split into a number of sections. For a list of what these are, what they cover and where the information came from please refer to The Careers Introduction.*

Sustainability communications and public awareness sector is a relatively new sector in its own right, although communications and public awareness raising has been happening since the start of the environmental movement in the 1960s. Sustainability communication includes all the different forms of communication that are engaged with explaining and debating environmental issues and showing the way forward in terms of actions, new products and services. Professionals in this sector use different methods of communication methods to exchange information about government initiatives, environmental issues and responsibilities, campaigns on new policy, corporate social responsibility and community and business development projects. The forms of communications range massively from audio (radio and internet), visual (TV and internet), written form (newspaper/magazine/flyers) and increasingly more popular, the electronic form (Internet, social networking, mobile phone). The types of communication can be grouped into three key areas, environmental journalism and environmental advocacy and green advertising.

Environmental journalism aims to advance the public understanding of environmental issues, create debate and assist with decision making processes. Environmental advocacy is about social action, so involves communication about the issues and problems but concentrates more on what you as an individual or member of a community can do to help (campaigning and engagement). Green advertising is about promoting environmental sensitive products and services. These can be specific environmental products (i.e. rain water tanks) or other products that have been adapted to be 'more green'. (i.e. carpet made from recycled plastic bottles)

All play a role in implementing behaviour change, and environmental journalism and environmental advocacy incorporate strategies to carefully plan and manage dispersal of information to co-ordinate with other activities within the environmental industry (i.e. new rebate scheme / new law).

The sector is new, fun and diverse with a wide selection of creative opportunities including writing, graphics, web design and development, social networking development. All play a role in getting environmental messages across to the whole community.

Three percent of the survey respondents worked in sustainability communications and public awareness sector. This chapter refers exclusively to this sector. A snap shot shows that 50% of the respondents aged between 26 – 30 years old and 70% are female. With 40% having worked in the environmental industry for 3 – 5 years, this sector has young but experienced professionals.

### ***Typical job titles***

Campaigner	Graphic Designer
Client Relationship Manager	Home Sustainability Assessor
Communications Coordinator	Information Officer
Communications Officer	Liaison Officer
Community Affairs Officer	Media Adviser
Consultant	Photographer
Environmental Advocate	Project Officer
Environmental Journalist	Web Designer

### ***Main activity of the roles***

- organise advertisements
- co-ordinate brand management
- implement communications plan
- create environmental displays and information boards that educate the community
- develop promotional material
- write newsletters for the community to help them understand sustainability, the natural environment and council's activities
- write internal newsletters to inform non-environmental staff of environmental projects
- update environmental information on council's website
- web design, development and updating
- graphic design
- organise and manage events
- facilitate discussions and workshops
- write and format reports
- liaise with advisory panels
- liaise with media
- manage the office and staff
- strategic planning
- project and relationship management
- provide support to environmental educators
- respond to enquiries
- social media networking
- co-ordinate stakeholder engagement and management

### ***Education and skills***

Within this sector the top generic skills were identified as:

- communication – written
- communication - spoken/verbal
- team work – co-ordination
- ability to get along with others
- critical thinking

The top environmental specific skills or attributes were identified as:

- knowledge of environmental and media networks
- broad knowledge of sustainability issues and policy with regards to social, environment and economic factors
- general knowledge of environmental systems processes (plants, animals and ecosystem types) and the environmental sector
- knowledge of research project design and development

- knowledge of the different perspectives of what sustainability is for different people, and how the average person thinks and changes
- environmental analysis skills
- former experience working as an environmental educator, park ranger and environmental workshop organiser

Similarly to environmental education sector, there is essential two ways in which to secure suitable Education and skills needed to enter this sector. One pathway is to undertake a degree in the environmental subject matter of interest (i.e. environmental law) and then follow this with postgraduate study or work experience in journalism, communication or marketing. Alternatively, you can do this the other way around, undertaking a degree in journalism, communication and marketing following it with post graduate study or work experience in the environmental subject of interest. Which way you do this, depends on the type of communication work you plan to pursue. If you plan to undertake journalism or advocacy work then you clearly need to understand the issues and problems to be able to write and communicate about them. However, marketing and advertising is less about the issue and more about the action, product or service, so specialist knowledge in those areas takes priority.

Of those surveyed, 78% of them said their education was fundamental to their role, but only 38% have studied an environmental focused course. Commonly the focus of the environmental course was environmental science, environmental engineering, sustainable management and corporate social responsibility. Others have studied marketing and communication based degree courses, commonly business marketing, international trade, commerce and marketing. Twenty two percent of the respondents were educated at a post graduate level, having studied masters in environment and sustainability, sustainable development, marketing and communications.

The most useful subjects within these courses were project management, writing skills, environmental management and marketing. So short courses or work experience opportunities that enable you to gain these knowledge and skills would prove not only highly desirable but very useful.

### ***Salary and openings***

There are communication and public awareness opportunities in all levels of government (communication / community departments), nor for profit organisations (media and campaign roles), corporates and businesses (corporate social responsibility reporting), consulting organisations (design houses) publishing houses and audio visual companies.

Environmental journalists work for specialist sections of newspapers, nature and green magazines, television and radio shows and news programs. Professionals working for not for profit organisations develop and deliver environmental campaigns and community engagement programs and are often the vital link between two very different worlds. Communication professionals working for governments, consulting organisations, publishing houses and audio visual companies work are often involved with the implementation of strategic communication and marketing plans at some level or another. That can range from large scale advertising campaigns in energy use reduction or localised promotion of community projects. Being a relatively new area, green marketing tends to be undertaken by specialist graphic designers and marketing professionals within consultancies. Very few corporate organisations undertake their own green marketing.

This is a very popular sector for people to set up in business, with 11% of respondents having done so. To do this you would need several years experience in the industry to not only gain the skills and experience required, but to develop strong networks.

Common employers of those surveyed included Sustainability Victoria, Earthwatch Institute, Environmental Protection Authority (EPA), Victorian Employers Chamber of Commerce and Industry (VECCI). The most common salary bracket for professionals in this sector was \$51k - \$75k (56%).

### ***The personal touch – hear from the sustainability communications professionals....***

To enter and succeed in this sector you need to have feet in two camps, the environmental and the communication. How heavy you're treading in each of these will depend on the type of career you want.

As a guide, to find opportunities you will need to become familiar with all the environmental networks as many jobs are often advertised within these networks. Networks can be used to meet potential employers and word-of-mouth is a increasingly popular way to hear about new positions, You should also consider volunteering as a way to get to know the people in the industry. Other tips professionals in this sector suggested were to:

- look outside the box, sustainability is evolving quickly and opportunities are created all the time
- align yourself with a reputable company, not one that is just out to make a quick buck and not help you develop your skills, knowledge and career
- think laterally about your skill base. In many communications roles, you don't need to understand the environment sector, you just need to understand people
- check out the online green directories to find information about green marketing / design companies and companies with green products and services.

### ***The sector's future***

On the whole, the journalism and advocacy side of the sustainable communications and public awareness sector hasn't really been affected by the recent economic downturn. With increasing awareness of climate change and major international events happening, it's been as busy as ever with little reduction in budgets or staffing. The green marketing has been slightly affected with companies cutting marketing budgets and not undertaking new projects.

As with any new expanding industry it's difficult to set up clear systems quickly, so there is a lot issues with co-ordinating messages and information to communities and the general public. Debate is good, but in terms of action, communities are often overwhelmed and confused with all the advice and information given. This often results in non action. Beating the "green fatigue" within the wider community is a major issue within the environmental industry, and this sector is the best placed to tackle this. The fast development of communication technology is also a challenge and an opportunity for this sector. Being able to retain suitable trained employees to keep up with new forms of communication is an issue. New electronic forms of social communication is a very cost efficient and fast way to communicate with the younger generation, which historically have been a difficult sector of the community to communicate with. With increasing information and engagement on the internet, there is a huge need for more open-source developers.

Currently, there are plenty of opportunities within this sector and this is set to grow as major environmental issues gain weight in the mass media. Governments are increasingly using communications (along side policy and regulation) to get communities and businesses to change existing behavior, so many have predicted increased funding in this area, creating more positions and projects. The recent economic crisis was a time of reflection for many companies who now see the value of being environmentally conscious in its activities. With business now picking up, an increasing number of businesses will want to communicate their changes (systems, new products, and new services) as away to recover quickly and achieve sustainable growth. This again will provide more opportunities in this field.

## **Career Profile Media Manager Sustainable Living Not for Profit Organisation**

**Salary bracket:** \$40-\$50k

**Employment Conditions:** Part-time, not flexible working hours and location due to role. If you use a bike to attend work events, we're paid for wear and tear on that bike.

**What was your initial motivation for undertaking environmental work:**

Nothing specific. I've always been involved in the environmental movement from a young age, and for as long as I can remember, I planned to work in it.

**What was your first role in the industry:**

This is my first professional role in PR

**Outline your career path:**

I studied zoology at university and had the opportunity to continue my study and research. I didn't want to stay in research as I felt I wouldn't make such an impact there compared to someone who writes articles and educates people about environmental issues. So I decided to study journalism and film-making, to increase the impact I would have as an individual by reaching a bigger audience. I got this Media Manager role while completing my film and journalism studies and ended up really enjoying it. It's really satisfying, because in this role I get to focus on writing about promoting understanding of the environmental issues that my organisation is working on. As a journalist I would have to start out covering anything and everything and a lot of stuff I'm not interested in. This way I get to specialise in environmental communication from the outset. I have previously produced an environmental current affairs program on SYN FM community radio.

**What are the main activities of your role:**

I am basically a link between two very different worlds, the journalists and the environmentalists, both talk different languages and get excited about different things. It requires me to talk to our policy staff to keep up to date with the policies areas they are working on and then working out how to tell the story to the media. I write press releases and link them to other events that are happening in the world and pitch these stories to the media. I work with my colleagues and journalists to manage material (interviews and articles) that are put out to the masses. I have also helped direct some policy development because the type of policy an organisation develops can become a great success with good media coverage, but fall flat if it fails to embrace and attract a broad audience. Media strategy and policy development are closely linked.

**What generic skills do you think are essential for working in this role:**

Excellent communication with people within and outside of your organisation is essential. You need to be able to speak and write to a huge range of audiences. Interpersonal skills are also important as you need to be able to really explain ideas to people well and convince them of ideas around media strategy or policy. A good understanding of the world and an understanding of politics and environmental issues and how they fit together is also very important. Knowing what other people need is also vital. You need to be tuned into what it is your organisation needs as well as what information media needs. You need to be someone who knows how to make other people lives easier and simpler. Be someone who delivers the information and resources other need before they know they are going to need it.

**How much of what you know have you picked up on the job:**

A huge amount is picked up on job, because each organisation is different and each staff member and media professional is different to work with. However, I would never have succeeded if I hadn't come with good communications skills and an excellent background knowledge of environmental and political issues. The jobs has honed my skills.

**What are the most interesting aspects of the position:**

Talking to media, as they have a very different view of the world. The contrast of the two worlds is very interesting.

**What hours do you work and how do you manage your workload:**

I don't think it altogether possible to manage the workload entirely. I think in this role you need to be open to the fact that, that's the nature of the job. Even if I worked full time, I'd still get contacted out of hours and have to work. The media cycle never stops.

**What do you gain personally from the job:**

It's satisfying when you get a win. For example when you get media coverage of an issue and that article plays a role in changing policy. I also love to tell the world about the hard work of my colleagues and my organisation. It is important to get recognition for the work they do to bring about a sustainable future.

**What advice do you give to someone wanting to pursue your career:**

Do a general degree that gives you an environmental background and an understanding on the main issues. Gain an understanding of media. You definitely need the two to do this job well. Some one who has just an environmental background would get eaten alive by the media world, Conversely a trained journalist with no environmental knowledge would struggle to work really effectively work in an environmental organisation.



## Sustainable development and planning sector

*This chapter is split into a number of sections. For a list of what these are, what they cover and where the information came from please refer to The Careers Introduction.*

The sustainable development and planning sector deals with the growth of cities, towns and regions by managing the planning and development of the built environment, its infrastructure and services for the existing community and future residents.

Planning determines the future needs of communities and balances this with the built environment, natural environment, economic sustainability and cultural heritage. Towns and cities are expected to grow in terms of both size and population, so professionals in this sector work to develop strategies and policies that balance these pressures and guide the future developments of housing, transport, utilities, health, education, communications and leisure. Planners, which is what the professional are often called, are also involved with enabling new, and regenerating existing, natural environments within the built environment.

Development takes the planning to the next stage. Projects are developed to proactively implement strategies and policies in place. This works the other way with strategies and policies being used to regulate the development of housing, transport, utilities, health, education, communications and leisure facilities. So professionals in this field can be involved with issuing planning permits for developments and liaising with property developers or undertaking innovative projects such as facilitating green roof and wall projects or extending public transport routes.

The sector is diverse. Professionals in this sector are involved in a huge range of planning specialisations, such as regional and rural planning, urban development, transport planning, urban design, service and infrastructure planning, neighbourhood renewal and environmental planning. They work in local, state and federal government, in property development businesses, private consultancy and in academia.

The sustainable development and planning profession is gaining increasing recognition due to the increased development pressures and the increased emphasis on the liveability of towns and cities. It is therefore very vibrant, interesting, challenging and rapidly changing with new policies, ideologies and technologies being incorporated.

Three percent of the survey respondents worked in the sustainable development and planning sector. This chapter refers exclusively to this sector. A snapshot shows that 42% are aged between 35 – 40 years old. Evenly split between genders, 33% have been working in the industry for 1 – 2 years and a further 33% been working in the industry for 5 – 10 years.

### **Typical job titles**

Environmental Planner	Planning Director
Senior Environmental Planner	Architect
Sustainability Planner	Strategic Planner
Planning Officer	Senior Strategic Planner
Green Infrastructure Consultant	Assistant Town Planner
Statutory Planner	Town Planner
Team Leader Development Assessment	Transport Officer

### **Main activity of the roles**

- analyse existing strategic and statutory planning policies and provide advice on how to incorporate green infrastructure
- analyse development plans and relevant parts of a planning scheme to that development
- building design
- communicate / liaise with applicants and team members
- undertake complex heritage assessment and evaluation on industrial and residential buildings

- write Environmentally Sustainable Design reports
- facilities planning
- statutory planning
- strategic planning
- write feasibility studies for building projects
- gather data and write reports in support of green infrastructure adoption
- review green wedge and other planning policy
- liaise with communities, state government and local government.
- prepare policy documents for adoption by council on environmental and sustainability issues
- project management for the design, construction and maintenance of rooftop gardens
- project planning and management
- write development and funding proposals
- provide media interviews to raise awareness of the benefits of green infrastructure
- provide advice to the public on environmental matters
- research and analysis
- undertake site visits to assess highest and best use for a site
- design and run workshops

### ***Education and skills***

The professionals working in this sector identified the following as the top generic skills:

- critical thinking
- communication – written
- team work – co-ordination
- communication - spoken/verbal
- ability to get along with others
- identifying complex problems and provide solutions

The top environmental specific skills or attributes were identified as:

- being able to read and interpret plans
- chain of custody investigation skills
- confidence in public speaking and media interviews
- general environmental knowledge and skills (ecosystems and issues)
- GIS mapping and specific computer skills in database analysis
- knowledge of building environmental control system
- knowledge of strategic planning processes, planning schemes and planning laws (federal, state and local)
- general planning skills
- environmental planning knowledge and experience
- land use planning experience
- natural resource management training
- understanding of local government
- passive building design experience
- knowledge of sustainable development principles
- broad understanding of the environmental harms caused by urban development
- public health expertise

Planning is a specialist profession and therefore has strict educational requirements. Similarly to environmental engineers, if you wish to become a sustainable development planner then you need to undertake a planning focussed course. But not every professional who works in this sector is a 'planner'. So professionals in this sector come at it in mainly two ways, undertaking a undergraduate planning course and gaining work experience or post graduate study in an environmental discipline, or vice versa. Of those surveyed, 64% of them said that their education was fundamental to their role, with 73% having studied an environmental focussed course, mainly in sustainable development and planning and socio-environmental assessment and policy. Other degrees included (Bachelor) planning, urban planning and development and architecture.

If you wish to be a planner than a degree in planning is essential. If you wish to pursue a more broad career in this sector, other than that of a planner, then other environmental focussed courses can be used to gain a base of knowledge (such as Bachelor of applied science, geography) and built on with suitable work experience.

Of those surveyed 60% were educated to a post graduate level having studied a masters. The most popular Masters courses were planning, urban development and design and social science (environment and planning).

The Planning Institute of Australia (PIA) has a list of accredited tertiary education courses and recognised Australian qualifications that are considered to provide an adequate foundation of theory, skills, and knowledge to allow graduates to work as planners in the field of urban and regional planning. (The Planning Institute of Australia [www.planning.org.au](http://www.planning.org.au))

### ***Salary and openings***

Planning is a dynamic, changing sector. Its also a vital profession as it shapes communities and places in which we live. There is a good demand for planners in Australia. With increasing development pressures and increasing complexity of work in this sector, career development prospects are excellent.

Professionals in this sector work in government, private companies and consultancies and academia. Forty six of the respondents worked for all levels of government. Probably the largest employer of which is local government who are responsible for the planning and assessment of development in their areas. Thirty six percent of respondent worked for private business and consultancies, who are recruited by a third party to provide planing advice and support. A few, but increasing number of large development companies now recruit their own planning professionals to manage development projects. Other opportunities lie within academia undertaking research and creating innovative development initiatives.

Common employers of those surveyed included local councils such as Wellington Shire Council, City of Boroondara, Greater Dandenong Council, and other organisations such as Groof Consulting, EPA (SA) and ICLEI Oceania.

The most common salary brackets for planning professionals was (jointly) \$51k - \$75k and \$76K to \$100k, both with 40%.

### ***The personal touch – hear from the sustainable development and planning professionals....***

A planning qualification and a depth of practical experience is really important to both enter and develop a career within the planning profession. A suite of experience in a variety of organisations within the planning sector, such as local government, private sector, state government is really important. It gives you a great insight into the industry and enables you to develop rounded experience and deep understanding of the sector. You need to be familiar with the main arguments for and against urban greening and urban growth and know the major players in the corporate, research and government sectors. So developing your professional networks is essential. Getting involved in the wider planning industry is a great way to develop those networks, so becoming an active member of Planning Institute Australia (PIA), Urban Development Institute of Australia (UDIA) and other state based organisations such as Victorian Planning and Environmental Law Association (VPELA) is highly recommended. Non planning professionals in this sector would be best to undertake a broad environmental qualification to provide a wide variety of skills and knowledge. Environmental skills are required in a wide range of jobs and workplaces within this sector and being broad knowledge and experience enables flexibility. There are many different routes to take in planning. Other tips included:

- be patient, work hard, complete some additional study outside your specific area if available.
- volunteer with community organisations with projects related to your field.

### ***The sector's future***

The sustainable development and planning profession has been affected by the recent economic crisis, but not significantly. Green infrastructure and development continues to be perceived in general as a 'nice to have' rather than a 'have to have', so is often the first item to be dropped off budget lines. But

conversely, the work load for many professionals in this sector has increased, due to the increased awareness of climate change and the implications of planning for communities of the future. A few organisations reported a reduction in staff numbers.

This sector faces more challenges in terms of sector development and progression, more than it does with personnel. But the former will effect the latter. At present the main personnel concerns are finding and retaining the right people to progress the industry holistically, with issues of burnout at the local level and young professionals leaving the regional areas to work in the city. It is essential that information pertaining to the benefits of green infrastructure is accurate, well researched, promoted then implemented. The main challenges to this is planning for the population boom; lack of content experience within federal and state bureaucracies; and development still being favored over environmental outcomes. This causes a lack of application of sustainable design in buildings, especially at the higher end. Clients are unwilling to take investment risks and incorporate sustainability into building design.

Sustainable urban planning is gaining more attention in the media and government policy development. The sector is starting to find new and engaging ways to promote the benefits of green infrastructure and high quality medium density housing. Professionals in this sector have the opportunity to develop new techniques and work with new theories all the time, so products and services are improving as a result, which in turn promotes the benefits of sustainable planning. To attract and retain more young professionals the sector needs to take the opportunity to promote its diversity and focus on mentoring them.

### **Career Profile Environmental Planner Government**

**Salary bracket:** \$60K - \$75K

**Employment Conditions:** Public Service Act. Flexible working time

**What was your initial motivation for undertaking environmental work:**

I'd trained as a carpenter/joiner and worked for a business. When this business closed I got a job with State Government at the Lands Titles Office, in a technical support role which was fairly uninspiring. This gave me the opportunity to study, and I chose to do something that I found interesting, and could see a future need for. So I studied Environmental Management (B App Sc). It's something I've always believed to be important.

**What was your first role in the industry:**

My first role was a bit peripheral, working with land administration issues, for the Government environmental department. I worked registering private land conservation agreements.

**Outline your career path since then:**

While with this group I worked for a short period as an environmental officer, on a special project. As the initial placement with department was temporary I returned to my initial workplace before filling in for three months as the "Marine Biologist" with coastal management in the department, dealing with policy issues and the environment. From there, I went to a land administration related position, then a marine planning position, before getting a further short term project officer (environmental) with coastal management, and then my current position with a Living Beaches Project as an Environmental Planner. My plan was always to go coastal and preferably marine.

**What are the main activities of your role:**

Environmental issues related to the laying and operating of a sand transfer pipeline along the coast. Presently the day to day work relates to contributing to obtaining a series of approvals for the project, some of which are for the siting of the pipeline and for consideration of the heritage of the area (aboriginal, post-settlement and maritime). This includes a lot of communication with a whole range of people from within and outside of government.

**What generic skills do you think are essential for working in this role:**

Working well within a group; ability to largely self motivate and manage; knowledge of government and department structure; written communication; ability to communicate well with a variety of other people; knowledge of, or ability to learn about, the issues that relate to the coast.

**How much of what you know have you picked up on the job:**

The technical side almost exclusively from the job, but the mechanics of operating in a complex work group comes from past experience, as does generic environmental knowledge

**What are the most interesting aspects of the position:**

The interface with the sea, being involved in the coast. Particularly where it involves seeing the reality of what we are dealing with. Working in a very positive workplace, where everybody cares about what happens to the natural environments.

**What hours do you work and how do you manage your workload:**

I work normal flexi time hours, for four days a week – on the fifth I am “dad”.

**What do you gain personally from the job:**

A certain satisfaction from working in a place with the potential to be involved in or see a lot of very interesting things. Although the current project is not directly environmental (I’m working with engineers and so forth) they are environmentally astute and I’m learning a lot from this association.

**What advice do you give to someone wanting to pursue your career:**

Try and get a lot of experience before finishing your degree, and even look for a short term placement or two.

Work as a volunteer, there are many, many environmental interest and lobby groups who need and rely on them.

## **Sustainable living sector**

*This chapter is split into a number of sections. For a list of what these are, what they cover and where the information came from please refer to The Careers Introduction.*

The sustainable living sector offers opportunities that mobilise the whole of our community, by identifying, demonstrating and encouraging ways of living that are sustainable, healthy and vibrant. The focus of this sector is therefore people, rather than the environment, (although this is the underlying motive) and showing leadership. It has a diverse range of challenging, satisfying and very rewarding roles which work to encourage and enable communities to live more sustainably, so includes social, economic as well as environmental elements to projects, practices, debates, actions and products. This sector is about looking at the whole picture and providing alternatives. It practically demonstrates a new, fun, positive lifestyle and empowers people to take an interest and make a positive change to the quality of their lives, as well as making a positive contribution to the environment. The sector aims to go full circle and influence environmental, social, economic policy with increased awareness, public pressure and action from communities. In terms of environmental issues it deals with problems that are one step removed from the environment itself, such as consumerism and animal cruelty, as well as those that are more obvious and have more media attention, (e.g. climate change). It tends to work predominately with households and communities, but there are several business focussed programs / organisations out there.

Professionals in this sector are involved in programs and projects that focus on encouraging behaviour change through education (the whys) and information (the hows). Education involves all manner of events, such as workshops, festivals, seminars and information and looks at social and economic factors, as well as environmental, when showcasing sustainable living. Information involves helping people to make decisions, so includes the design, development and promotion of products, services and actions that people can use and engage with to make a positive change. Increasingly, the internet and mobile phones are being used as an avenue to get information and choices across.

Three percent of the survey respondents worked in sustainable living sector. This chapter refers exclusively to this sector. A snap shot reveals that 50% of them are aged 41 years or more, with an even distribution of male and females. There is a good spread of experience with 25% being in the environmental industry for 3-5 years, and 5 – 10 years and 10- 15 years respectively.

### **Typical job titles**

Director  
Eco Tourism Officer  
Education Officer  
Environmental Community Developer  
Media Manager

Procurement Advisor  
Program Manager  
Project Manager  
Project Officer  
Sustainability Manager



### **Main activity of the roles**

- advise and train staff on sustainable procurement processes
- co-ordinate bulk buys of eco-materials
- build business case for program
- identify new ways to raise awareness amongst specific communities
- innovate public relations opportunities
- engage and communicate with stakeholders
- co-ordinate events, activities and meetings
- database reporting and management
- deliver presentations and training sessions on sustainable issues
- design training programs (for trade, communities, government)
- review and develop policy
- manage environmental incentives and certificates
- facilitate community sustainability workshops
- install sustainable products
- manage projects (partnerships, budgets, timelines, staff, promotion, media)
- meet with external stakeholders and partners
- meet with team members and internal stakeholders
- network within the sector
- organise environmental activities
- write media releases and pitch to media outlets
- project design, implementation and management
- monitor and report outcomes and outputs of project
- raise awareness of environmental actions in disadvantaged communities
- develop programs and secure funding
- track and log environmental news
- visit environmental places to learn in the practical way

### **Education and skills**

Interestingly, this is the only sector that hasn't included communication as a top generic skill to have to be successful. The respondents working in this sector identified the top generic skills as:

- identifying complex problems and providing solutions
- initiative and enterprise
- ability to get along with others
- judgment and decision making
- project management

The top environmental specific skills or attributes were identified as:

- ability to segment markets
- an interest in how procurement can impact sustainable choices
- knowledge of government (state and local) procurement process
- care about environment and an interest in sustainable living
- analytical skills
- community engagement skills
- detailed knowledge on current environmental issues, environmental systems and sustainability principles
- good understanding of the environmental industry (energy, water, waste, biodiversity)
- knowledge of hierarchy of environmental actions for the residential and business sector
- ability to evaluate environmental and social outcomes
- experience in government programs (rebates and incentives)
- having the drive to make things work
- management of environment projects with partners/stakeholders
- organise and manage events and projects
- practical sustainable living skills
- product / program development experience
- work with Cultural and Linguistically Diverse (CALD) communities

Due to the focus of this sector being on people and behaviour change, having an environmental qualification to move into this area isn't essential like other sectors within the environmental industry. Very few professionals in this sector entered it as their first step into the industry, many have experience and skills from other environmental and non environmental roles. Half of the respondents had an environmental qualification and those that have, had studied a broad environmental degree, commonly environmental studies, and then continued with post graduate study to gain specialist skills and knowledge. People focussed qualifications have proved useful to enter this sector, such as degrees in community development, marketing and journalism.

Postgraduate study is popular, and is used to consolidate existing experience and knowledge and to gain new specialist skills and knowledge. Fifty eight percent of the respondents had undertaken a postgraduate course commonly in environmental studies, environmental science and sustainability. A few had undertaken specialist programs such as the future sustainable leader program.

Other useful ways to develop the required skills required to work in this sector include gaining focussed work experience, or under taking a short course in IT, project planning, delivery and management, marketing, media and communications.

### ***Salary and openings***

In a sector that promotes the importance of work, life balance, it hardly surprising that it had the largest percentage of part time workers than any other sector within the environmental industry, with 25% working part time hours. Professionals in this sector work mainly for government departments and local government, most commonly on procurement projects and community development programs. But opportunities can be found in not for profit organisations, working on community development programs and research projects and found in businesses, working on sustainable products and services. A few research opportunities can be found in universities, identifying new sustainable living practices and behaviour change theories for example. This is a growing sector, with many individuals setting themselves up in business. There has been a large growth in internet based eco businesses in the last five years.

Common employers included not for profit organisations such as Sustainable Living Foundation, Environment Victoria, Sustainable Living Tasmania, state government such as Sustainability Victoria, Department of Environment, Climate Change and Water NSW and local councils.

Professionals in this sector fell within the following salary brackets: \$51k - \$75k (42%) and \$75k - \$100k (33%).

### ***The personal touch – hear from the sustainable living professionals....***

General career experience and specific environmental and community development experience certainly helps to enter and succeed in this sector. But as the sector is focussing on mobilising whole communities, an ability to build relationships and work with others is really important. So to enter and succeed in sustainable living sector you really need to make networks in the sector and build respectful relationships with media professionals. This will enable you to know what is going on and understand the industry, get known in the industry and get your work (project) known too.

This sector is very partnership focussed, so having experience in working in partnerships with other organisations is key. These partnerships should include a media body, so you will need to educate your organisation and peers about the value of media and public relations. Other vital knowledge is the understanding of the entire project management cycle, from design to inception, engagement, management, implementation, monitoring, and evaluation.

Finally, but most importantly, to really speak from the heart and engage with people on a meaningful level and inspire them, you need to practice what you preach and live sustainably yourself.

### ***The sector's future***

The sustainable living sector hasn't really been affected by the economic crisis. A few organisations have reported less external funding available which obviously has a knock on effect with projects and staffing. Generally the sector has been business as normal.

This doesn't mean that it doesn't have its own set of challenges like other sectors. With it being a diverse and fluid sector, there is a serious lack of information on relevant sustainable living career paths. That and the fact that it is perceived (in the business world) as being poorly paid, means that the sector struggles to recruit skilled employees, especially really good big picture thinkers which is essential for the evolution of the sector. It affects the sector's ability to stay ahead of the community and show leadership and direction, develop strong policy positions and continue to put public pressure on government. One of the sector's biggest challenges is the changing the underlying consumption ethic and systems of today's society.

Other issues include how the majority of formal environmental qualifications at present don't support the development of this sector as they predominately deliver skills and knowledge in the main environmental disciplines (energy, water, biodiversity etc) and do not look at the whole holistic picture. However, there are a few new sustainability courses now running, but it will take a few years for these graduates to feed into the workplace.

There is a huge need to provide appropriate courses and training on sustainability. This need exists in both the workplace and the home, with the development of short courses to re-skill both employees interested in the working in the sector and industry in general and to build on the good community development work that is currently underway.

This sector has the opportunity to deal creatively with issues, thinking outside of the box. It is a passionate sector that is motivated by good people, doing good things, which is hard to say about other industries.

### **Career Profile Head of Sustainability for a major property services company.**

**Salary bracket:** \$150k+

**Employment Conditions:** Full time

**What was your initial motivation for undertaking environmental work:**

To have a career that was interesting and contributed to the protection of the environment.

**What was your first role in the industry:**

Environment Officer with an electricity company.

**Outline your career path since then:**

Have worked in environmental and sustainability management roles within the energy, water, waste, construction and property sectors.

**What are the main activities of your role:**

I manage sustainability as a centralised function within Australia's largest property company.

**What generic skills do you think are essential for working in this role:**

Communication, relationship building and the ability to understand technical information and translate it to a non-technical audience.

**How much of what you know have you picked up on the job:**

Almost all of it.

**What are the most interesting aspects of the position:**

Working to protect and enhance the environment in an industry sector that has picked up sustainability and is running with it at a rapid pace.

**What hours do you work and how do you manage your workload:**

50-60+ hours per week. Work hard during the week, but keep weekends free.

**What do you gain personally from the job:**

A sense that what I do everyday makes a difference.

**What advice do you give to someone wanting to pursue your career:**

Study a technical discipline such as science or engineering, but then learn how to speak the language of business so that you can be most effective in changing business attitudes and practices.

**Waste management and recycling sector**

*This chapter is split into a number of sections. For a list of what these are, what they cover and where the information came from please refer to The Careers Introduction.*

The waste management and recycling sector involves the management of solid and hazardous waste. Solid waste involves the implementation of the waste hierarchy, that of reducing, reusing, recycling, recovering and disposing of waste produced in households and businesses. Hazardous waste management involves the safe handling and disposal of flammable, corrosive, reactive, or toxic wastes that are created from manufacturing and industrial processes. Increasingly, the term 'waste' is being replaced with 'material' or 'resource', with the aim to attach value to what is still a resource, not rubbish. After all, one man's trash is another man's treasure.

Solid waste is an environmental concern as it's a critical element of sustainable development. Australians generated approximately 32.4 million tonnes of solid waste in 2002-3, which equates to 1,629 kilograms of waste per person. Of this amount, 27% came from municipal sources (domestic household and other council waste e.g. beach, parks and gardens, streets), 29% from the commercial and industrial sector, and 42% from the construction and demolition sector. (Australian Bureau of Statistics, Australia's Environment: Issues and Trends, 2007) The amount generated is growing year on year.

As management of waste has developed, what was once discarded in the general solid waste stream is now pulled out and treated separately as hazardous waste. The introduction of The Hazardous Waste (Regulation of Exports and Imports) Act 1989 (updated 1996), regulates the export and import of hazardous waste to ensure that it is disposed of safely so that human beings and the environment are protected from its harmful effects.

Professionals who work in this sector are involved with the classification, tracking, treatment, disposal, and of waste material. Others are involved in promoting and implementing the waste hierarchy, reducing the amount of waste generated, and reusing and recycling what is generated. This includes positions at a strategic level, developing policy and programs and positions at the point of the delivery, designing equipment that separates recyclables and educating communities.

Some professionals deal with specific waste streams, schemes or problems, such as computer e-waste or product stewardship schemes for problematic household waste streams. Several professionals work with or in certain industries to improve resource efficiency and improve triple bottom line of their performance.

Three percent of the survey respondents worked in waste management and recycling. This chapter refers exclusively to this sector. A snapshot of who they are shows that 69% were female and are evenly spread across the age brackets 22 – 41 and over. The waste management contains the highest level of new professionals compared to other sectors, with 39% having worked in the industry for 1 – 2 years.

**Typical job titles**

Chemical Engineer	Landfill Manager
Civil Engineer	Recycling Co-ordinator
Environmental Consultant	Sales Engineer
Environmental Engineer	Senior Environmental Officer
Environmental Health Officer	Solid Waste Manager
Environmental Officer	Waste Education Officer
Hazardous Waste Engineer	Waste Engineer

**Main activity of the roles**

- approve art work for the advertising of programs
- assess treatment/disposal/reuse options of contaminated soils and hazardous waste.
- communicate with local government officers and councilors
- engage the community in waste management
- contribute to organisational business plan and develop better project management systems
- co-ordinate other consultants
- co-ordinate small events to promote recycling, waste reduction
- co-ordinate stakeholder responses to policy proposals and development
- customer processing systems reviews
- analyse waste data
- produce articles for publications and designing promotions and marketing material
- deliver waste education to schools, communities and councils (workshops and talks)
- environmental reporting
- establish good working relationships with stakeholders, communities and government bodies
- answer enquiries from the general public
- management of grants programs including project milestones, budgets, waste diversion targets
- prepare proposals and writing reports
- project management, including procurement and contract management.
- provide quotations to customers and writing tenders
- provision of independent and quality information,
- regulate industries and activities (Environment Protection Notices).
- undertake sales contact visits
- undertake site assessments.
- strategic planning
- write information and decision papers for the Board and Minister

**Education and skills**

Professionals in this sector come from diverse backgrounds. They identified the top generic skills as being:

- communication – written
- communication - spoken/verbal
- judgment and decision making
- resource management skills - management of self

The top environmental specific skills or attributes were identified as:

- contracts and customer relationship management skills
- education program experience
- knowledge of environmental systems, processes and issues
- general knowledge of environmental sustainability
- experience in site assessments.
- experience in waste management industry
- knowledge of waste legislation, regulation and policy
- local knowledge of other environmental industries
- resource recovery/recycling project management qualification and experience
- solid waste processing systems and technology knowledge
- strategic planning experience
- stakeholder engagement skills
- understanding critical impact of efficient logistics in making recycling viable.
- understanding and identifying the points of resistance in systems failure.
- volunteer / community work in environmental field
- knowledge of hazardous materials

Many professionals in this sector (83%) have studied an environmental focussed qualification, commonly being in environmental management and environmental science. Others have undertaken a degree in



engineering. The educational requirements differ greatly with specific roles. As a general guide, roles within the hazardous waste area require more technical and scientific qualifications than the solid waste area. Studying an engineering degree (mechanical, industrial, chemical or civil) or a science degree (chemistry, environmental, hydrogeology or earth sciences) are useful for both areas, but those wanting to get into hazardous waste should consider degrees in toxicology, chemistry and chemical and environmental engineering.

Experience is highly regarded in this sector with only 54% of respondents saying that education had been fundamental to their role. The research suggested that the vast majority had picked up what they know, on the job. Others indicated that practical based qualifications are preferred. So hands on / field based courses such as TAFE Environmental Management is highly regarded. Other qualifications that provide knowledge in project management, strategic management and develop your understanding of the behaviors and attitudes of the general public are also very useful in this sector, which is increasingly working with communities and businesses to reduce waste volumes.

### ***Salary and openings***

Work in waste management can be found in both the public and private sectors. Research suggests that the sector is slightly bigger within the public sector, with the majority of waste positions being within local, state government and government agencies. Waste professionals in local government are involved with the co-ordination of solid waste services (kerbside collection) within the municipality working with private collecting and recycling businesses. There is a waste education and public awareness element to these roles. Opportunities also exist in state government and waste management groups. The former, recruit professionals to co-ordinate programs and initiatives that aim to minimise waste and maximise the efficient use of valuable resources. They also run programs to reduce specific waste problems (i.e. light globes / mobile phones / littering). Waste management groups are responsible for co-ordinating and planning municipal waste management activities in certain areas and have a broad range of waste management roles including strategic planning, education, training and public awareness. They collaborate with local councils and state government, industries and businesses to set targets and desired outcomes, prioritising effective actions and monitoring progress.

Of the respondents in this sector, 39% for worked for the private sector (business / corporate). These companies carry out most of the operational work in the industry, activities include landfill ownership and management, waste collection services, integrated waste management systems, recycling and materials recovery and hazardous waste treatment. Environmental and engineering consultancies also play a significant role in providing waste management advice to businesses and hazardous waste management.

There are relatively few openings within not for profits and academia. Both generally involve research work, into both waste management, its developments and technologies but also into behaviour and attitude change to waste.

The survey results suggest that this is a popular sector in which to start an environmental career, with 39% being in the industry for 2 years or less.

Common employers of those surveyed included government: Sustainability Victoria, Department of Primary Industries, Parks, Water and Environment, EPA Victoria; Waste Management Groups: Metropolitan Waste Management Group, Regional Waste Management Group and private companies: Steinert Australia, GHD Pty Ltd.

The most common salary bracket for professionals working in this sector was \$51K - \$75K, with the remainder earning \$76K - \$100K (42%). Alongside environmental consultancy and energy sectors, waste management is one of the better paid sectors within the environmental industry.

### ***The personal touch – hear from the waste management and recycling professionals....***

Experience is really important to secure work in this sector, especially in technical roles. So too, is an environmental qualification and having good networks. So you need to be involved in the sector before

you even work in it. Get involved with member based organisations and networking groups and use these to gain relevant work experience you need to widen your knowledge and skills.

For certain roles, there is no need for waste knowledge or experience. So often, knowledge of other non-environment sectors (i.e. finance, construction etc) is just as valuable as these sectors become engaged, or are even targeted, to improve sustainability outcomes. Match your industry knowledge with strategic priorities of the waste organisation, display an interest and passion in wanting to protect the environment and help industry become cleaner and more efficient producers of goods and services, and you've made a great start. Other tips to securing and developing a career in the waste industry include:

- get ready to be persistent and patient as not everyone is as passionate about this issue as you are
- be ready and able to adapt and learn quickly to the changing industry.
- do your research and know what job you want and where to find it to avoid ending up in bureaucratic, paperwork based job which doesn't live up to expectations. Talk to as many people in the industry as possible. Cold call and ask to speak to people about their own jobs, people are often willing to share their time and learning from experienced people is absolutely invaluable.

### ***The sector's future***

The waste sector has been impacted by the economic crisis in several ways. The bottom fell out of the recycling commodities market (plastic, aluminium, steel). There was also a reduction in investment in waste infrastructure, with many new processing facilities and upgrades plans being put on hold for in excess of 12 months. This has caused recruitment freezes and voluntary redundancies, so there have been instances of more work with less staff. However, where there are people there is waste, so there is a base of work that always needs to be undertaken and managed.

As waste itself is a constant but evolving challenge, the sector itself faces several challenges in terms of personnel and career development. As with many sectors within the environment industry, there is a lack of skilled, experienced, people to undertake key roles, but to what extent this is an issue is not known. As mentioned earlier, much of the knowledge that is useful is not gained at university but through industry exposure. This creates a situation where if you have no work experience, you can not secure work, but without a job you can not gain experience. Research shows that retaining staff is also a major challenge. Further, lack of funding in waste education and infrastructure development affects the number of opportunities in these areas. Although environment and sustainability is the issue of the moment, waste due to return of investment being low and slow, is often a difficult business case to build without favourable legislation.

The Federal Government's climate change and carbon trading policies, state programs (such as the Victorian Advanced Resource Recovery Initiative) and as we move to take advantage of new technology (such as waste to energy technology) more positions and career opportunities will be created. As more initiatives and developments like these are rolled out, the easier it is to build business case for waste management in other industries. This creates a cascade effect, which will create more waste opportunities across the board.

### **Career Profile Senior Environmental Consultant - Waste Management for a large professional service firm.**

**Salary bracket:** \$75-\$100K

**Employment Conditions:**

Minimum 37.5 hours week. Flexible working hours, working as many hours as is required, deciding our own finish times and can work from home. The company is owned by employees. There are overseas offices, so there is an opportunity to deal internationally and travel overseas. Due to the size of the company there's an opportunity to work on wide range of projects. Other perks include social and sporting activities and new modern offices in city.

**What was your initial motivation for undertaking environmental work:**

I fell into the industry by accident as the Environmental Industry didn't really exist when I started work back then.

**What was your first role in the industry:**

I worked for the NSW Government as a casual report writer in the recycling advisory unit.

**Outline your career path since then:**

I continued to work for NSW Government on a casual basis. When the EPA was created our unit was moved into it's jurisdiction, where I worked in the waste unit and the dangerous goods unit. I was then head hunted to work for Pacific Waste Management, as a Supervisor, looking after residential contracts on kerbside recycling. I was promoted to Manager of this department, overseeing all garbage and recycling collection contracts. I worked briefly doing waste audits for a consultancy, which involved going out at night collecting samples from garbage and recycling bins, then moved to Kinhill Engineers to be a Librarian. Here I got involved in doing a number of waste projects for clients too. Through these contacts and networks, I secured a job as Waste Auditor at a waste consultancy firm. I worked there for 11 years undertaking waste audits, surveys and data analysis, writing waste management strategies and reports. I then obtained my current role by contacting the employer and approaching them for work. I've never applied for a role, I've either approached them or been approached for work. It's what happens in the private sector.

**What are the main activities of your role:**

I undertake research and data analysis, write reports and use my experience to provide waste related advice to clients (Local and Federal Government/Government Agencies, other corporations and even our own offices located elsewhere). I organise sub contractor consultants, both externally and internally, who deliver more specialist services to support our work (i.e. water analysis).

**What generic skills do you think are essential for working in this role:**

Being able to write reports that are cohesive and readable is essential. The ability to use programs such as excel to analyse data is also necessary. To have the skills required to organise, negotiate, as well as motivate staff are very useful. You need to be able to get along with people and use your intuition and memory to apply your experience to the current project / issue to get the job done.

**How much of what you know have you picked up on the job:**

All waste related information I have picked up on the job. The ability to write, I gained from my journalist background. At university I got a good grounding in environmental issues and doing presentations which are both very useful.

**What are the most interesting aspects of the position:**

Working on a wide variety of projects throughout Australia and the World. Some projects aren't waste related, so I get to research a broader range of issues. I also enjoy providing specialist advice, travel and working with people who are at the start of their careers.

**What hours do you work and how do you manage your workload:**

I get in early (7.30) so if I need to do extra hours at the end of the day, I can.

**What do you gain personally from the job:**

Professional development and expansion of my work experience makes me a more valuable member of the team and company. I like to keep experience and skills broad, as this provides more opportunities for work in the future and reduces the potential of non employment. I also get to travel to places I wouldn't normally go.

**What advice do you give to someone wanting to pursue your career**

Three main things spring to mind. Learn to write properly, especially reports, making sure grammar and spelling is correct. It's basic but important. Clients are buying a report and it needs to be of a high standard. Learn the principles of survey and statistics because everything we do involves research, which comes down to survey and statistics. Knowing what is a valid sample size and how results can be used more widely is important. Finally, be prepared to start at the bottom and do the hard, unpleasant work. This experience will be really valuable when you move up the ladder and are developing strategies and plans. You fully understanding how things work at the delivery level and how these plans will effect them.

## **Water quality and protection sector**

*This chapter is split into a number of sections. For a list of what these are, what they cover and where the information came from please refer to The Careers Introduction.*

Control and prevention of water pollution is vital for the health of the environment and human beings. Water plays a central role in the function of the earth's ecosystems and is also vital for human life, in terms of drinking and food production as well as other activities that sustain our well being. Water supply is a major concern and challenge for Australia, with a drying climate and an increase in demand for water. But quality of water is just as important an issue as the quantity, as the quality determines it's potential use.

The Department of Environment, Water, Heritage and the Arts has developed a long term framework, called Water for the Future, to secure the water supply of all Australians. To create long term water security and change water behaviors so we are able to do more with less, it has four key priorities:

- using water wisely
- supporting healthy rivers
- taking action on climate change
- securing water supplies

As part of this, the 1992 National Water Quality Management Strategy (NWQMS) provides a national approach to improving water quality in Australia's waterways. The Australian Government is working with state and territory governments to protect water resources by improving their quality, reducing pollutants and supporting the businesses, industry and communities that depend on water, through the development and implementation of policies, processes and guidelines.

The water quality and protection sector provides a large variety of enjoyable and challenging career opportunities as it works to deliver these strategies and keep our waters safe for people and for the environment. The sector itself is split into a number of distinct areas such as urban water management (includes drinking water supply and treatment, waste water treatment and stormwater management) rural water management (includes irrigation), pollution prevention and management, groundwater protection, surface water management (includes catchment management,) river and wetland health protection and estuary management.

Five percent of the survey respondents worked in the water quality and protection sector. This chapter refers exclusively to this sector. A snapshot shows that 33% are aged between 31 – 35 years old, 56% are female and a third have been in the environmental industry for 3 – 5 years.

### ***Typical job titles***

Aquatic Scientist	Hydrologist
Biologist	Limnologist
Civil Engineer	Recycled Water Officer
Environmental Consultant	Section Head - Biological testing
Environmental Engineer	Waste Water Engineer
Environmental Health and Safety Officer	Water Co-ordinator
Environmental Manager	Water Education Officer
Environmental Officer	Water Engineer
Environmental Protection Officer	Water Quality Manager
Environmental Scientist	Water Quality Officer
Freshwater Scientist	Water Quality Policy Officer
Hydrogeologist	Water Quality Project Manager

### ***Main activity of the roles***

- analyse Water Acts and regulations
- assess development applications with activities of environmental significance
- develop and implement company policy, guidelines and codes of practice
- ensure company is compliant with environmental legislation and water restrictions
- field work and sample collection in rivers and estuaries
- data collection, input and analysis (water quality, biological aquatic data)
- laboratory work (e.g. water quality sample submission, algae sample processing)
- monitor harmful freshwater and marine organisms
- undertake site investigations and trace pollution sources
- manage investigation and remediation works
- water quality modeling
- Water Sensitive Urban Design (WSUD)
- business development, planning and budget management
- communicate with stakeholders (councils, government agencies)
- community engagement

- network and liaise with government agencies
- provide technical advice internally and externally (colleagues and clients)
- provide general advice on stormwater pollution
- develop communication materials and tools to engage and assist communities and businesses
- develop maps to show local water issues and pollution sources
- project management and planning
- quality assurance / quality control
- work with developers, consultants and contractors
- write, reports, executives and ministerial briefs, papers, letter and other correspondence

### **Education and skills**

The water quality and protection sector has the full range of environmental roles identified in the Environmental Industry Matrix. Obviously the skill and education requirement of a role in this sector is highly dependant on whether it's scientific, technical or management based. In general terms, the top generic skills were identified as:

- critical thinking
- identifying complex problems and providing solutions
- team work – co-ordination
- communication - spoken/verbal

The top environmental specific skills or attributes were identified as:

- ability to analyse GIS data, create maps and interpret aerial photos.
- ability to detect changes and analyse interactions, in order to find cause and impacts (spatial relations and time series skills)
- water quality modeling skills
- statistical analysis experience
- quality assurance and quality control (QAQC) skills
- knowledge about hydrological / hydro geological systems within marine, freshwater and groundwater environments
- broad knowledge of water cycles and catchments (urban water cycle, catchment management, stormwater catchment, surface water interaction)
- previous practical experience of aquatic systems and knowledge of aquatic organisms
- knowledge of waterway health and pollution indicators
- taxonomic skills
- knowledge of landform
- knowledge of sustainability, the impact of societies on the natural environment
- knowledge of water legal frameworks and water licensing
- knowledge of government processes
- understanding the water industry, its stakeholder and its networks
- water sensitive design skills

Of the environmental professionals surveyed in this sector, 94% had studied an environmental focussed qualification and 78% of them had indicated that their education was fundamental to their role. Just over half of those surveyed were educated to a graduate level having studied undergraduate degrees. Courses that lead to the technical professions in this sector include undergraduate degrees in science (environment, biology), hydrology, engineering and applied science (aquaculture). Technical professionals work directly with water in the hands on areas such as water quality research, monitoring and analysis. Alongside these professionals are others who are involved in the management side of water quality which include policy development and education and training. Appropriate environmental qualifications here include environmental management, environmental policy and environmental studies, often combined with other subjects such as marketing, communication. Of the respondents, 41% had achieved master's degree and PhDs, including masters in environmental management.

It is also recommended to develop the following knowledge to support your environmental expertise:

- basic and advanced statistics,
- project management
- environmental economics
- GIS mapping and remote sensing



### ***Salary and openings***

Water quality and protection is one of the main environmental policy areas for both federal and state government and main functions of the Environmental Protection Agencies (EPA). The vast majority of positions in this sector are therefore within the government sector. Of the respondents working in the water quality and protection sector, 83% worked for the Government. The water portfolio falls under the Australian government's Department of Environment, Water, Heritage and Arts, and incorporates the Water Efficiency Division; Water Governance Division; Water Reform Division Environment Quality Division; Policy Co-ordination Division and National Water Commission. Within each state and territory, the environmental department has the responsibility to implement, manage and protect its state water resources through the management of high-level strategic water policy, management of access, pricing and trading, regulating water resources and protecting water environments. Alongside this are the EPA's who are responsible for environmental (in this case water) protection. Local governments also have water quality professionals who help develop and implement local water use and stormwater plans. The roles and responsibilities differ greatly, depending on the council environment strategy.

Water authorities employ professionals to undertake water quality and protection duties. This includes water quality analysis for drinking water, treatment of stormwater, operation of waste water treatment plants and publicity campaigns and education programs to reduce the contamination of water in industry and homes.

Environmental and engineering consultancies also hire water quality professionals, who provide services to both industry and government. These roles involve monitoring water quality, and undertaking assessments and audits and compiling reports.

A considerable percentage of respondents worked for not for profit organisations. The type of roles these professionals would have includes research, campaigning, education and training and community development.

Common employers of those surveyed included: Australian Government of Environment, Water, Heritage and Arts; Northern Territory Department of Natural Resources, Environment, the Arts and Sport; New South Wales Office of Water; Environment Protection Authority; Beveridge Williams; City of Melbourne; Cooks River Sustainability Initiative; ICLEI Oceania; Bankstown Council

The most common salary bracket for professionals working in this sector was \$51k - \$75K (65%), with the remainder earning \$76k - \$100k.

### ***The personal touch – hear from the water quality and protection professionals....***

Specific environmental experience was identified as being the most useful in securing a role in this sector. Other attributes and activities that will help include:

- be proactive, look for the job you want, not what the employer is telling you, you want
- related volunteer experience and extra-curricular activities are highly regarded when looking to break into the industry
- develop a broad ecological knowledge and experience that will enable you to be flexible
- diversity of skills is essential for government agencies
- gain familiarity with local government processes and legislation is a great bonus, understand the implications of water conservation and quality.
- develop good analytical and negotiating skills
- it never hurts to work on your communication skills
- really understand how manmade systems and natural systems work or are influenced by terrain and climate. Spatial and time data is all that matters
- know when to compromise to obtain a result.
- work hard and develop contacts

### ***The sector's future***

The water quality and protection sector has been affected by the recent economic crisis, more so in the corporate sector than in government. The corporate sector (e.g. consultancies) have been effected by clients (including government) having reduced budgets and less money to spend on advise and

monitoring of water. This has resulted in consultancies making staff redundant. The government, although relatively stable, has been affected mainly in terms of budgets cuts, restructuring and job freezes. On the whole there have been fewer water quality and protection jobs advertised.

As concerns over our water security grow, the sector is set to grow, develop and change considerably over the next few years. Some say that the water industry is the next petroleum industry, the boom industry of the decade. With this comes many personnel challenges. Professionals working in the industry have identified the key challenges as being:

- able to continue work at a meaningful level on water issues (especially water quality) is a challenge with budget cuts
- maintaining environmental science and engineering skills in the sector with many experienced staff on the verge of retirement
- finding professionals that understand sustainability at a state level, and can manage emotional needs against practical applications

Along side the challenges are the opportunities. Water is an increasing environmental area of interest in both the public and policy arenas, with water security being constantly linked to climate change. It is therefore unlikely to loose its grip in those arenas. With continued pressure, increasing legislation and technological development comes more employment opportunities. There will be strong growth in the stormwater sector brought about through regulation change. There will be great opportunities for young professionals with new skills sets to join the industry.

### **Career Profile Project Engineer Stormwater for Private Company**

**Salary bracket:** \$60K – \$75K

**Employment Conditions:** Full time, flexible working hours

**What was your initial motivation for undertaking environmental work:**

A passion for ensuring the environment is maintained into the future, protected and enhanced.

**What was your first role in the industry:**

Student Environmental Engineer at Otek Australia (Groundwater sampling and reporting)

**Outline your career path since then:**

I have worked predominately in the private sector, for a number of different organisations. I've been a part time and full time Undergraduate Engineer for Esler and Associates, a Undergraduate Engineer involved in site surveillance, reporting and data handling for Otek Australia, a Graduate Engineer in Water division for Connell Wagner. I now work full time as a Project Engineer, stormwater and Water Sensitive Urban Design (WSUD)

**What are the main activities of your role:**

Design of WSUD and stormwater elements, project management, subdivision design, water harvesting.

**What generic skills do you think are essential for working in this role:**

Communication, time management and innovation.

**How much of what you know have you picked up on the job:**

About 60% of detailed information is from on the job training.

**What are the most interesting aspects of the position:**

Designing innovative, sustainable stormwater solutions.

**What hours do you work and how do you manage your workload:**

Work 8-5 Monday to Friday. Workload managed by listing out tasks and dates required and thorough communication.

**What do you gain personally from the job:**

Design skills, people skills and the ability to manage.

**What advice do you give to someone wanting to pursue your career:**

Listen at university, be prepared to compromise and never assume anything is finished!

## Water conservation sector

*This chapter is split into a number of sections. For a list of what these are, what they cover and where the information came from please refer to The Careers Introduction.*

Water is vital for life. It plays a pivotal role in the function of the earth and all living things on it. With Australia being the driest continent on the earth, water supply is a major and constant concern. Drought and increase in population puts increasing pressure on water supply. We may be able to do very little about the amount of water that enters the supply, but we can do a lot to reduce the amount of water that is used. The water conservation sector works to get all of society to do more with less.

There is a fine line with regards roles within water conservation and roles within water quality and protection. For this guide, and in terms of job opportunities and career paths, jobs that relate to reducing the amount of water that is consumed by businesses and communities through education and training programs, the design, development and promotion of water saving products, the improvement of water infrastructure and creation of new supplies are classified in the water conservation sector. Other roles relating to quality are classified in the water quality and protection sector.

The Department of Environment, Water, Heritage and the Arts has developed a long term framework, called Water for the Future, to secure the water supply of all Australians. Two of its four key priorities are using water wisely and securing water supplies. This involves the improvement of key irrigation infrastructure to reduce water loss and enhance efficiency, an investment into domestic rainwater and greywater programs, the replacement of urban water infrastructure, the development of a desalination plant, water recycling schemes and stormwater projects. This is achieved through a capital works program, development of regulations, implementation of incentives such as rebate schemes, enforcement of laws and distribution of fines.

Alongside federal government, state and local government work to manage water conservation issues involving partnerships and programs with business and communities. The main activities involve education and training, marketing and public awareness raising, environmental planning and management, which all help reduce water use, save money and contribute to the better management of our water resources. Other opportunities in water conservation include the design and development of water saving products and systems.

Two percent of the survey respondents worked in water conservation. This chapter refers exclusively to this sector. A snapshot shows that 66% of those respondents were aged over 36 years old and 67% were male. One third had worked in the environment industry for 3 – 5 years and one third had worked in it for 5 – 10 years.

### **Typical job titles**

Campaigns Officer  
Communications Officer  
Environmental Manager  
Environmental Officer  
Hydrogeologist  
Marketing Manager  
Principal Environmental Scientist

Sustainable Water Program Officer  
Water Conservation Co-ordinator  
Water Conservation Project Manager  
Water Conservation Project Officer  
Water Educator  
Water Policy Officer  
Water Scientist

### **Main activity of the roles**

- analyse and manage water data (groundwater, surface water, spatial data)
- manage client base
- communicate with external customers
- co-ordinate and manage teams of technical professionals and resources
- deliver workshops to businesses and communities about water conservation
- design groundwater investigation programs
- develop water management policy and management actions

- facilitate discussions about issues/options with senior water managers and water user representatives
- implement and co-ordinate field work program
- negotiate with water managers and users to clarify issues and develop management responses
- project management (work planning, funding, management of project resources)
- project administration
- read water policies
- refine internal procedures
- write reports and papers for oral presentations
- stakeholder engagement
- write tenders
- undertake water and resource efficiency project analysis

### ***Education and skills***

Unlike the water quality and protection sector, this sector contains less scientific professionals and relies more on technical, communication, education and management type roles. The education and skill requirements are therefore different. The top generic skills were identified as:

- communication - spoken/verbal
- team work – co-ordination
- identifying complex problems and providing solutions
- communication – written

The top environmental specific skills or attributes were identified as:

- demonstrated environmental industry experience in achieving environmental results and good basic environmental systems and issues knowledge
- basic hydro geological and water resource knowledge
- experience working with a broad range of people including landholders, Government agencies (local, state, commonwealth), community groups, industry organizations
- knowledge of sustainable solutions and environmental awareness raising
- ability to listen and integrate views from different people and facilitate discussion about water management issues and future management needs
- passion to make a difference
- understanding of different perspectives about water management, and environmental water needs
- applied research background and science qualification

All of the professionals within this sector had studied environmental focussed qualification, with 67% or them stating that it had been fundamental to their role. All had studied to a graduate level or higher with undergraduate honours degrees completed in environmental studies, environmental science, environmental management, hydrogeology, natural resource management and sustainable development. A third had undertaken post graduate degrees to develop their careers, obtaining masters in subjects such as natural resource management and sustainable development.

The advice given by the professionals recommends the development of project management and behaviour change knowledge to support your environmental expertise.

### ***Salary and openings***

Water conservation, like water quality and protection, is a key policy area for federal and state government. Due to water conservation being very reliant on changing behaviour of society, there are other facets to this sector over the quality and protection sector, with openings in corporate, private businesses and not for profit organisations. Of the respondents working in the water conservation sector, half worked for the government and a third for a not for profit organisation. The remainder worked for themselves, a corporate organisation, private business or academia.

As mentioned in the water quality and protection sector section, the water portfolio falls under the Australian government Department of Environment, Water, Heritage and Arts. Within each state and territory, the environmental department has the responsibility to implement, manage and protect its state

water resources through the management of high-level strategic water policy and the management of access, pricing, trading and water regulation.

The roles and responsibilities of water professionals in local governments differ greatly, depending on the council environment strategy. But with increased public pressure and restrictions these professionals tend to work more in water conservation than they do water quality. They work to promote the incentives and programs developed at state level to local communities and are involved in other co-ordinated programs, such as International Council for Local Environmental Initiatives (ICLEI) Water Campaign. They also co-ordinate local environmental groups and other activities to increase community action.

Water authorities employ professionals to promote and increase the involvement of national and state wide schemes and programs. Much of this involves raising public awareness, providing statistics and information on water storages and water use. Increasingly, other government agencies, such as the chamber of commerce, are getting involved with sustainability programs that involve reducing water use in businesses.

A few environmental consultancies hire water conservation professionals who involved with the development of, or improvement of, water infrastructure and supply.

A considerable percentage of respondents worked for not for profit organisations. The type of roles these professionals would have includes research, campaigning, policy development, education and training and community development.

Common employers of those surveyed included: Department of Sustainability and Environment, New South Wales Office of Water, City West Water, Power Water, Barwon Water, ICLEI

The most common salary bracket for professionals working in this sector was \$51k - \$75k (50%), 30% earned above that \$76k - \$100k and 20% below that.

### ***The personal touch – hear from the water conservation professionals....***

Having an environmental (academic) qualification and specific environmental experience matched with good people and communication skills were identified as important in securing a career in this sector.

Other tips and suggestions included:

- mix with professionals or take on short term work in the organisation or field you're interested in to develop networks to hear about actual and potential opportunities and demonstrate your capabilities
- if you're not confident at least try and pretend to be in a job interview.
- communication and evidence of initiative are often more impressive than knowledge
- expect to be good at multi-tasking and meeting tight timelines.
- you need to be a good people person and understand how to bring out the best in staff you are directly responsible for.

### ***The sector's future***

The survey generated mixed views on whether the sector has been affected by the economic crisis. The sector has been affected in terms of many environmental projects have been postponed due to lack of capital investment. With fewer projects, consultant and competitors have been cutting tenders and have been even more willing to compete in new areas. This impact has been buffered by the position of water conservation on the political map in certain states (Victoria, Western Australia). Water security is a major issue and, as a result, careers in this sector are fairly secure.

The water conservation sector is set to grow and develop as the need to secure our water supply intensifies. Even so, professionals working in the industry have identified key challenges as being:

- identifying the most appropriate balance between meeting demands for water now and in the future, with some solutions being very controversial even within the sector itself
- a skills shortage – existing ability to find qualified and experienced practitioners and retain them



However, extreme dry conditions in South East Australia over the last 12 years have created a fundamental change in community, industry and government. Views about water and water security, how it should be managed and used will continue and the sector will grow along side the climate change sector. Water conservation management and the Carbon Pollution Reduction Scheme (CPRS) will become mainstream business requirements and will create an increasing number of environmental management, consulting and auditing roles to help businesses to adjust.

### ***The Environmental Career Matrix***

In this chapter we have looked at the different sectors within the environmental industry. But there are other ways to view and dissect the industry in the identification of career opportunities. People generally come at their careers from three angles:

- the **sector** in which they want to work for (this is often linked to a focus in education or an area of interest),
- the **type of job** they want to do (this is linked to skill base, experience and knowledge and interest),
- the **organisation** they want to work for (this is linked to personal preferences, work and environmental ethics).

By looking at the angles together, it is possible to narrow down and hone in on key areas in the environmental industry in which you could, and would like to, work. This is essential as reiterated in the Careers Advice section. Many individuals accessing environmental careers advice want to get information about, and to understand, the environmental industry. This is not possible. Due to the scale and distribution of the environmental industry and the information available, it would take an enormous amount of time to research it all. Although it would be great, there is not one all encompassing guide to the environmental industry in Australia. It's therefore vital to narrow down the area(s) in which you want to work and research those respective areas.

This guide proposes the conceptual framework of the ***Environmental Career Matrix*** in which to look at the environmental sector. It can be used as a tool to identify key sectors, job types and organisations (or a combination of two or all three) that you can and would like to work for. In particular, you can use it as a way of thinking about how the type of environmental job you are interested in is represented in the sectors, and the sorts of organisations that are offering these jobs. As an example to give you the general idea, a few environmental careers have been detailed in this matrix. However, we cannot provide the details for every combination within the matrix due to the extent of environmental careers and the limited resources available to put this guide together.

What should be noted is that there is some cross over in terms of industries and jobs. For example, environmental education is a sector, but it is also a job type. This is the case for several others, namely policy and legislation; marketing and communications; and research. The main reason for this is that the number of jobs is so large that they are effectively a sector in their own right, and need to be cross referenced back to job types and organisation types (for example, a position exists to develop marketing material for education programs; another to develop environmental education policy).

We know it's not easy. It is very complex, but that's the nature of the beast, the environment...

The matrix is made up of three axes:

#### Axis 1: The Sectors

Air quality and protection  
Conservation and management of biodiversity  
Climate change and carbon trading  
Energy efficiency and renewable energy  
Environmental consultancy  
Environmental education and training  
Environmental impact assessment

- Environmental sustainability policy, legislation, protection and enforcement
- Environmental sustainability research and development
- Green design build and construction
- Land management, quality, protection and site restoration
- Natural resource management
- Sustainability communications and public awareness
- Sustainable development and planning
- Sustainable living
- Waste management
- Water conservation
- Water quality and protection

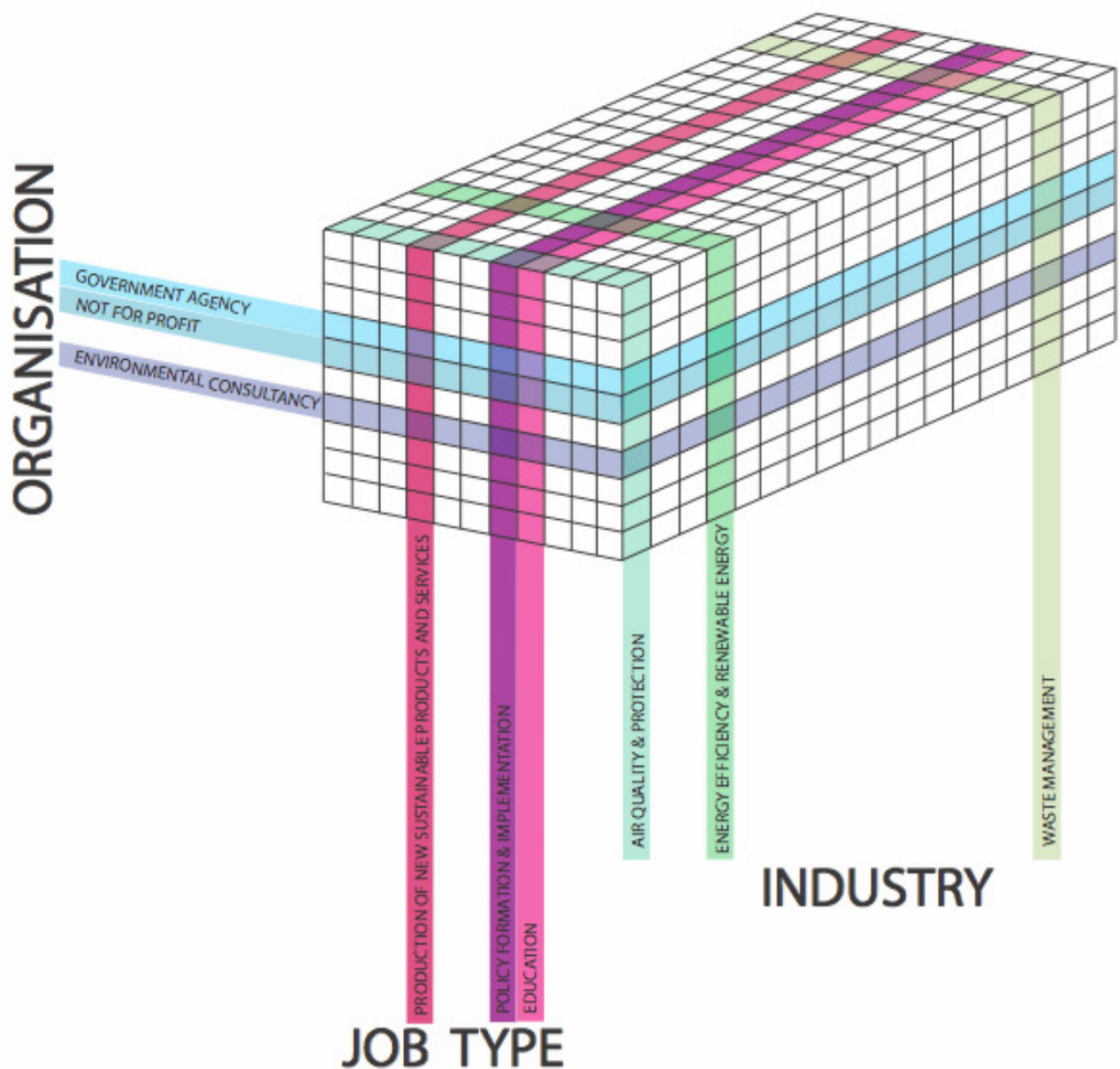
#### Axis 2: The Job Types

- Environmental monitoring and assessment
- Environmental resource management and protection
- Research (into sustainability issues, solutions and technological development)
- Design of new sustainable products and services
- Production of new sustainable products and services
- Environmental management of products and services (non sustainable products)
- Eco - accounting / financial systems (Corporate Social Responsibility)
- Policy formation and implementation (eg. rebates / water charges / campaign and lobbying)
- Legislation formation, implementation and enforcement (eg. Water restrictions and fines)
- Education (in communities, schools and workplaces)
- Marketing and Communications (PR and Journalism)

#### Axis 3: The Organisations

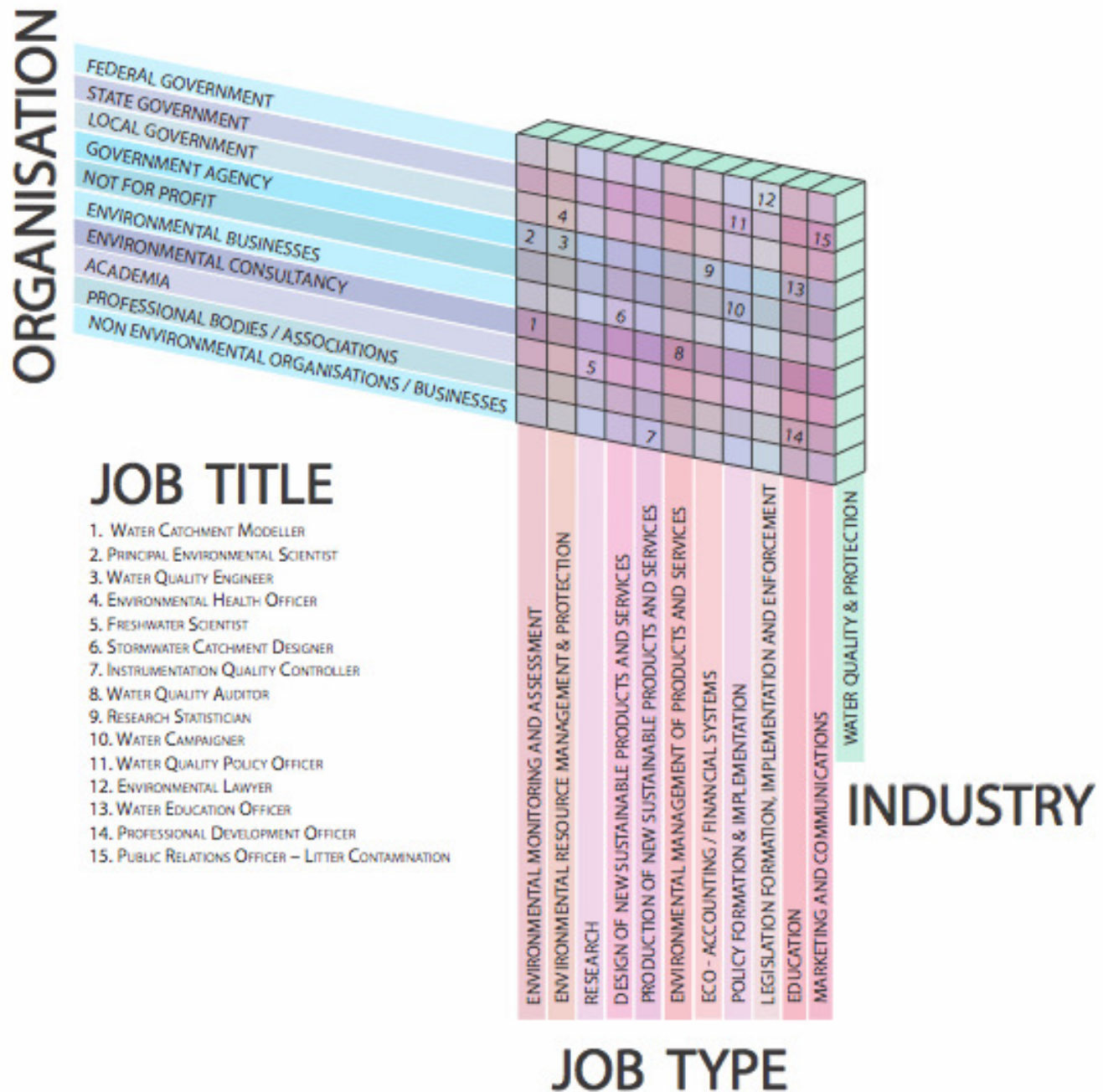
- Federal Government
- State Government
- Local Government
- Government agencies
- Not for profit organisations
- Environmental businesses
- Environmental consultancies
- Academia (University, Tafe and further education institutions)
- Professional bodies / associations
- Non environmental organisations / businesses

In the next few pages, the matrix is illustrated at three levels. The first level is the matrix as a whole, demonstrating the sectors, the types of jobs and the organisation types. The second diagram shows a layer of the matrix, concentrating on one specific sector, water quality and protection, and showing how this can be broken down by job type and organisation type. The third and final diagram shows a number of job titles in one individual cell.



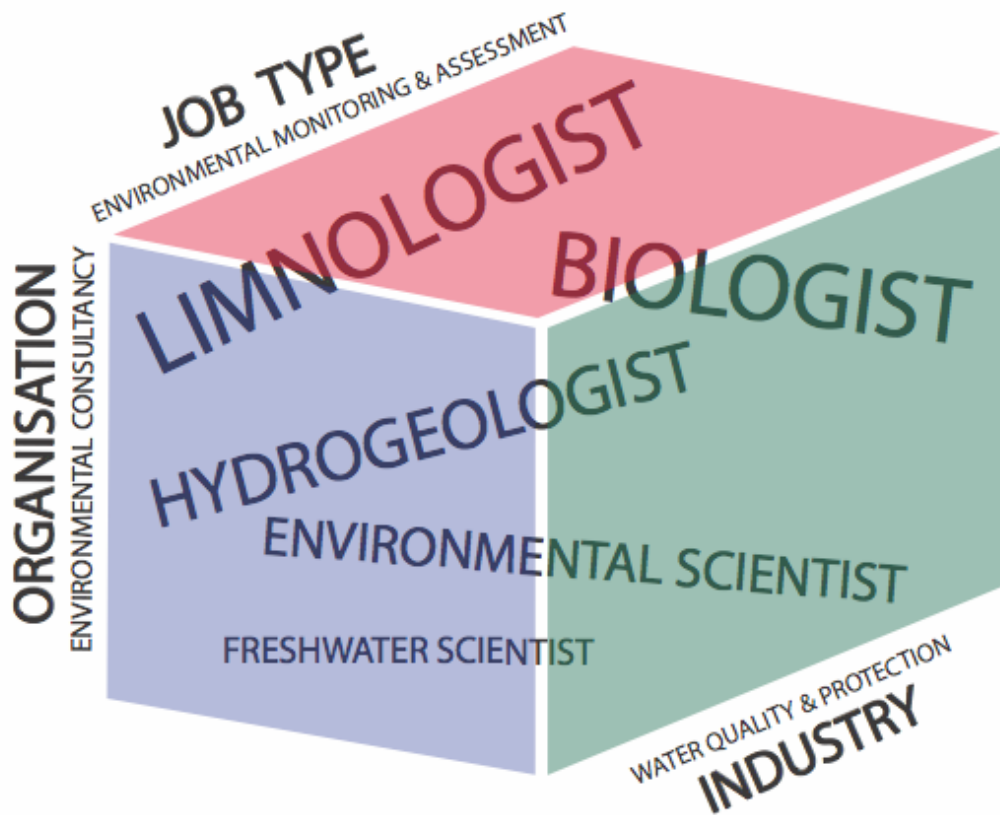
**Diagram 1: The Environmental Career Matrix**

This diagram shows the Environmental Career Matrix. The aim of this is to illustrate the structure of the industry and show how they (organisation types, job types and sectors that make up the environment profession) intersect. Not all the detail has been included here at this level as the illustration would be overtaken with text and titles. A few examples have been used to demonstrate its structure, the axis details are listed in the previous introduction. If you imagine a number of roles in each cell, this diagram shows the scope of the industry and demonstrates the wealth of environmental positions within it.



**Diagram 2: A layer of the matrix, showing a sector against job and organisation types**

The matrix can be split and viewed in a number of ways. Here we show just one layer using the example of water quality and protection sector. It can be used to review the different job types and different organisation types in the water quality and protection sector. A few examples of job titles have been placed in certain cells to give you an idea of how the layer works. There are job and career opportunities practically in every cell. To provide an example, if you were interested in working in government in this sector, then jobs such as Water Quality Policy Officer (11) or Environmental Health Officer (4) may be of interest to you. Alternatively, if you were interested in the design of new systems and products, a Stormwater Catchment Designer (6) is a possible career. This diagrams illustrates just a few examples, there are many, many more jobs and careers.



**Diagram 3: A cell of the matrix, the last level of the matrix.**

This diagram takes the matrix to another level and gets more specific. It details examples of other potential jobs titles in the cell alongside Water Catchment Modeller (1) from the previous matrix layer diagram. This cell is within the water quality and protection sector (**the sector**), contains jobs that are involved with the monitoring and assessment of water (**job type**) and are based in environmental consultancies (**organisation type**).

#### Using the matrix to find your cell and build their content

It's human nature to want to fully research and understand the full suite of potential opportunities that you are faced with. As it's not possible, or practical, to try and research the entire environmental industry, this matrix provides you with a conceptual framework to enable you to narrow down key areas in which you can undertake further research and explore suitable role(s) or career(s) within the environmental industry. The Environmental Career Matrix, is a bit like a 3D sudoku puzzle, you can narrow down your search by identifying things you don't want to do (no match), just as much as you can identifying areas in which you do want to work in (match). You can cancel out rows, and columns and view it in layers or its entirety. Typically, you'll end up with a number of cells, each of which contains a number of environmental careers that you can further research.

#### *So how do you get started?*

Below we outline how you can use the matrix and the information provided in this guide to take your first steps in finding opportunities in which you could potentially work:

- Think about and identify the following (one or all) and you will start to identify areas (cells) in which you could work:
  - what area of the environment am I interested in? What areas am I not interested in? What am I good at? This all helps to identify the **sector** in which you want to work



- what skills do I have? What skills don't I have? This helps to identify the **type of job** you can do
  - what work-environment would I enjoy? What work-environment wouldn't I enjoy? This helps to identify the **organisation** you could work for
- read the relevant industry sector(s) within 'The Careers' chapter to gain a basic understanding of that sector(s)
  - read the following sections within relevant industry sectors to help build up your profile and use it to continue to narrow down opportunities. Look at and:
    - research 'job titles' listed
    - note down which of the 'main activities' listed you enjoy and can do and identify associated jobs
    - identify the skills you have from the skills list and identify associated jobs
  - read 'The Industry' chapter to gain a better understanding or scale of the matrix, the size of the layers and cells (i.e. the water sector is bigger than the sustainable living sector; there are more roles within government organisations than not for profits) and identify potential growth areas within the industry
  - read and use the information within 'The Careers Advice' chapter to start to build up the information in your cell(s), your profile and your action plan
  - use the 'where to go for further information' section and organisation list (appendix 1) to identify suitable organisations to contact to build your networks, attend events and undertake career research to continue to build up the information in your cell(s), your profile and your action plan

By combining the matrix (the framework) with the guide content (basic information) you will be taking your first step in exploring the opportunities and potential of the environmental industry.

Remember, the aim of this guide is not to provide you with all your career answers, but provide you with a starting point and directions for your environmental career - we offer thoughts and basic information as well as a suggested framework to use, to identify a potential starting point(s) and career pathway(s) you could pursue within the environmental industry.

### Finding pathways

The matrix can also be used to look at potential career paths. As you change and develop you may want to move through a sector or even the industry.

By identifying your **new** interests, developments in education, expansion in skill base / experience / knowledge as well as any changes in personal ethics and preferences, you can identify other roles in new cells in which you want to pursue. Using this conceptual framework can help you visualise the steps you need to take to get from where to, are to the new cell(s) you have identified. This matrix helps shape different horizontal and vertical pathways and the steps needed to be taken to move from one area into another. Very rarely do people move out of their sector, out of their job type and organisation type in one step (moving randomly / diagonally across cells).

For example (refer to matrix layer diagram, Diagram 2), if you are currently working as a Public Relations Officer in State Government and have the desire to work in environmental campaigning, by using the matrix you could identify a number of ways to achieve this move, by looking horizontally and vertically. You could, amongst other options, either:

- Look for a policy role in state government, build up your policy experience and knowledge and use this to then move into a campaigning role in a not for profit organisation

OR

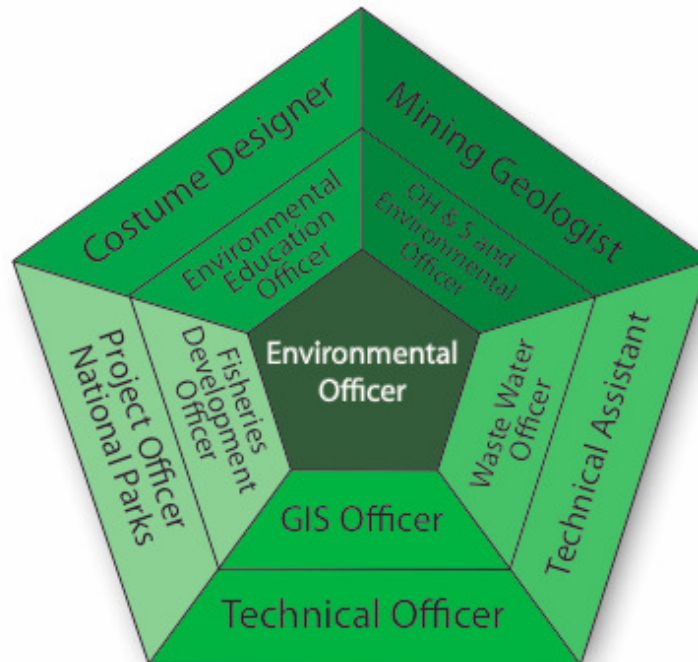
- Look for a public relations / marketing role in a not for profit organisation, undertake work experience or study to build on policy and campaigning knowledge and use this to move into a campaigning role.

### **Career Pathways**

Through out this chapter (The Careers) you will see career profiles from a wide selection of environmental professionals. The career profiles detail a brief description of the previous roles and career history of the professional. But as with most things in life, there is more than one way to achieve an outcome. This following example shows you five ways that have been used to move into positions called Environmental Officer. The information comes from the answers provided by the respondents when asked, 'Please provide a brief outline of previous roles you have had, listing up to two to give an indication of your career pathway'. The example provides a story about education, experience, skill gap recognition and skill development. It indicates the massive potential for career development within the industry, and how people, coming from several different backgrounds, can all come to work in similar positions.

#### **Five ways to environmental officer**

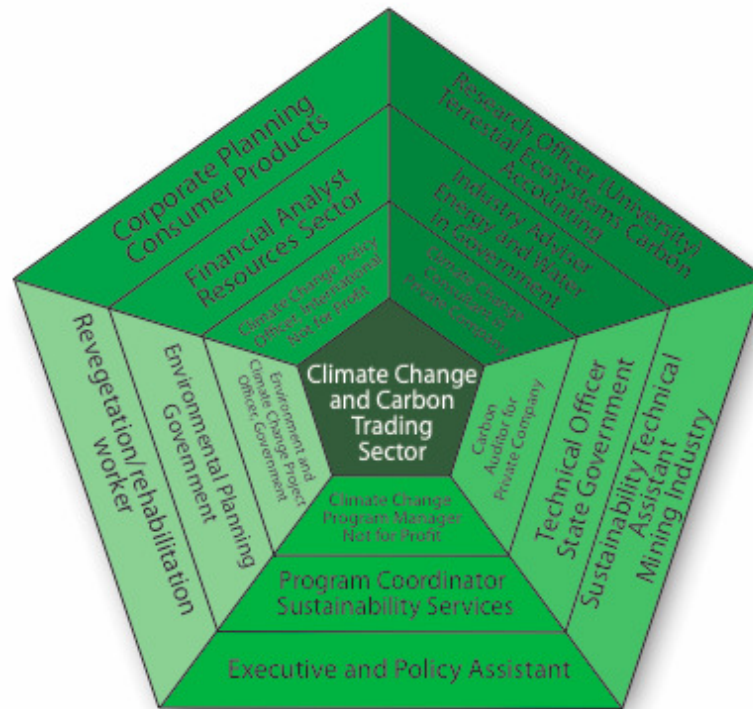
The career pathways to an Environmental Officer begin at the outside of the pentagon, where the initial training or educational field of the respondent is identified, to the middle which is the position they now work in.



### Five ways to climate change and carbon trading sector

Conversely, this next example shows the range of positions that are associated with the climate change and carbon trading sector. So if you wanted to work in this sector you can see that there are several types of positions that give you access to the sector. Which position you come from and which you move into will depend on your personal interests, experience, and the opportunities presented to you from an employer, changing government policies and regulations, and economic conditions.

The career pathways to a role in the climate change and carbon trading sector go from the outside of the pentagon to the middle as above.



## Chapter Four: The Career Advice...

This section provides advice on how to secure employment within the environmental industry. The advice is compiled from the results and comments made within the two surveys that were completed by environmental professionals and environmental recruitment specialists. This information builds on the career advice presented in the previous guide, *The Guide to Environmental Careers within Australia 2004*. The 2004 guide contains information on education for an environmental career and work experience opportunities to equip and prepare you to enter the environmental workforce. This career advice section builds on that information and should be read along side the career advice section of the 2004 edition. This career advice section details ways in which to increase your employability by:

- knowing the sector you want to enter
- knowing the roles that interest, and are open, to you
- knowing and selling yourself
- how to apply for roles
- identifying general and environmental specific skills required
- identifying education patterns of existing professionals

It also provides some background information for career changers. It details information on how career changers have moved into the environmental industry, with some tips on how you could do it yourself. Finally this section provides information that was identified as a priority by the respondents of the survey. The survey results showed that information on career pathways, industry development and trends, environmental career networks and events and jobs opportunities was needed. So this section finishes with an outline on where to go to get this information and support when seeking a career within the environmental profession.

Generally, opportunities are increasing within the sector, but the number of people wanting to enter the industry is growing too, making it competitive. Developing a plan of action which details the area in which you want to work, in terms of sector and job type, the skills you have and the skills you need to develop, will help you identify steps you need to take to secure suitable employment within the industry. Whether you're a recent graduate or a career changer, keep in mind that it will not happen overnight. You need to be proactive, persistent, patient and positive.

### **Know the Industry**

As previously described, the environmental industry is large, diverse and is growing and changing at a rapid rate in comparison to other industries. It is impossible to describe the environmental industry in detail within this guide. This guide provides an overview of the industry and its structure, helping you to find a starting point in which to research and explore sectors and types of roles that interest you.

The industry is about 30 years old and contains a vibrant mix of experienced and highly skilled professionals. The environmental professionals surveyed showed that a third of the respondents were aged over 41. In several sectors, such as water conservation, quality and protection, waste management and conservation of biodiversity, the imminent retirement of experienced professionals is a looming problem. Further, of the responses of professionals completing the survey, 16% were aged 36 – 41 years and 25% aged 31 – 35 years. Very few respondents were aged 31 and under. The most common length of time within the industry was 5 – 10 years (27%), suggesting that the sector is fairly mature in terms of both age of professionals and length of service.

Of the respondents:

- 61% are environmental professionals working for an environmental organisation
- 18% are non environmental professionals working for an environmental organisation
- 14% are environmental professionals working for non environmental organisation

This gives an indication of how the industry looks when broken down into the three types of green collar workers outlined in chapter two.

The environmental industry can also be viewed in terms of sectors and their size. The top 5 sectors in which the respondents worked are outlined below:

- conservation and management of biodiversity
- environmental consultancy
- environmental policy, legislation, protection and enforcement
- environmental education and training
- water quality and protection

In terms of organisation type, the majority of the survey respondents worked for government (57%), with 25% for corporates or private businesses, 13% for not for profit organisations. Four percent had their own business and 4% worked for academia.

With a survey base of 432, these statistics give an indication of how the industry is made up in terms of career types, sector size and organisation types, giving scale to the Environmental Industry Matrix, detailed in chapter two.

This section has provided some very top level information to outline the environmental industry, providing a bit of scale and scope to the environmental industry matrix. What is paramount and very clear, is to be successful in securing employment within the environmental industry you need to use this outlined structure to take the next step and:

- research and identify where you want to go within the environmental industry (sector)
- undertake further research into that sector, and understand it in terms of structure, issues, policy and networks
- develop networks within that sector
- build your own profile in the sector you want to work in.

An overwhelming number of survey respondents commented that networks are essential in securing and developing a career within the sector. Networks. Networks. Networks. Networks.....

### **Know the Roles**

Due to the diversity of the environmental industry, the breadth of jobs within it is colossal. This research contained a survey which listed 73 job titles, most of which were selected by one or more respondents. Added to that, a further 131 'other' job titles were provided. As the Environmental Industry Matrix shows, within each sector of the environmental industry, there are essentially the following job types:

- Environmental monitoring and assessment
- Environmental resource management and protection
- Environmental research (into sustainability issues and solutions)
- Legal (development and enforcement of laws, restrictions and fines)
- Policy formation and implementation (rebates / charges / campaign and lobbying)
- Environmental management of products, services and organisations (that are currently non sustainable)
- Corporate Social Responsibility (CSR)
- Educational and training
- Technology research
- Technological development and design roles (products and services)
- Manufacture of sustainable products and services
- Eco - accounting / financial
- Marketing and public awareness raising

The best way to understand what these roles mean on a day to day basis and whether you have the skills set, the personality traits to successfully undertake the role, as well as to ascertain whether you would enjoy such a role, is to speak to a person(s) who actually works in the role. A written document, such as a job description and position outline, are open to interpretation, so jobs can be very different



from what you imagine. So use the networks you have developed whilst researching the industry to really find out what that job entails. Use this to decide whether this role is for you and what your strengths and weaknesses are in securing such a role. Jobs with similar job titles will differ within different types of organisations and within different industries, so you may need to speak to several individuals.

### **Know Yourself**

You wouldn't sell a product without knowing what it is and what it's capable of. You therefore need to really know and understand yourself, to know what you're offering. So do research, get to know yourself and be confident and ready to 'sell' yourself. You will need strong communication skills, lots of energy and a well researched and compelling argument to engage and convince others that you are part of the way forward. To fully understand yourself, you will need to know the following and the positive implications these have on the position you are applying for:

- likes / dislikes – What do you enjoy about life? How do you feel about the outdoors / commuting?
- strength / weakness – What are you good at, is this the same as what you enjoy?
- skills / attributes – What skills do you like to use?
- personal beliefs – What ethics / beliefs do you have and how could that influence the workplace?
- interests / passions – Is the environment an interest for you or something you want to do for a living?
- goals / motivations - What would you like to change in your life? More satisfying job / learning new skills / gaining a better or different education / starting your own business?

### **Applying for Roles**

It's a well known fact that only a small percentage (around 30%) of jobs actually get advertised, the rest are described as the 'hidden job market'. The survey showed that many had secured employment through an advert on a job website, however many used other ways to secure work:

- advert on job website (22%)
- through previous role (17%)
- through word of mouth - professional networks (16%)
- advert in newspaper or magazine (15%)

What the survey highlighted was that the smaller and newer sectors within the industry (climate change and carbon trading for example) tended to fill their positions through word of mouth and professional networks, whilst the larger sectors tended to fill their position through job adverts on the internet. There is an increasing number of environmental specific job websites and several sectors have their own specific job sites (natural resource management and water sectors for example). A list of these websites can be found in the 'where to go' section. The larger sectors, with a community of professionals which have a strong network (such as environmental education sector) tend to fill their positions through word of mouth and their networks. Other popular ways to source roles is to check individual organisation's websites. Again this emphasises the importance to be clear on what you want to do and identify potential avenues (in this case organisations) that will allow you to do that.

Another major finding of the research was the need to be proactive. Undertaking the following actions will improve the potential of securing a position within the industry:

- identify organisations you want to work for, approach them directly, send in your CV and follow up with phone calls
- approach people at meetings and functions about opportunities within their organisations.
- consider a company who is just starting up and approach them about developing a stand alone green role that you can add value to in a different capacity
- talk to people. Be a voice, a person on the telephone. Do not rely on emails alone.
- talk to the right people about the role (people in the same department as the role, not HR people)
- create the role within your existing organisation or even set up a business

The key message from the research was that having and using networks is essential in securing employment. There is a hidden job market and that job adverts should be treated the same as carbon offsetting, the last action to undertake to ensure all avenues have been covered.

### **Using your Skill Base**

As mentioned the environmental job market is extremely competitive and it's really important to be prepared, well skilled and have some experience in the area you are applying for. Education may provide you with the knowledge required and some skills, but will not equip you with all the general skills needed to undertake the role and be successful in developing your environmental career. The survey highlighted that general career experience and an environmental qualification were the two most popular attributes required when applying for environmental roles. The most important generic skills enabling effective working in existing roles were identified as:

- communication - spoken/verbal
- communication - written
- critical thinking
- team work - co-ordination
- identifying complex problems and providing solutions

When asked what the most helpful generic skills were throughout the early days of their career in the environmental industry, the respondents identified:

- communication - spoken/verbal
- communication – writing
- ability to get along with others
- initiative and enterprise
- learning skills
- critical thinking

Environmental specific skills differ greatly from one sector to another, so for information on the most important environmental specific skills please refer to the specific sector in which you are interested in.

The Complete Guide to Environmental Careers in the 21<sup>st</sup> Century (Doyle et al 1999) identifies that employers foremost want people with good written and verbal communication skills. This research confirms this. When environmental recruitment specialists were asked to identify the top three generic skills employers ask for when recruiting environmental professionals, they identified communication as the top skills required. Negotiation / persuasion / argument building skills and problem solving skills were the other two skill sets identified as important.

Negotiation and argument building is all about knowing your position, understanding what your bottom line and bargaining power is and taking action from there. Assertiveness and listening is essential for effective negotiation. The former helps other people to understand your needs and enables you to effectively pursue problem solving and explore solutions. The latter is a skill that enables you to understand the other party's needs, explore ideas, identify possible options for an agreement and avoid misunderstanding. Achieving a mutual, workable and achievable agreement with others is a fine skill to have and one that employers desire. Similarly creative problem solving skills are considered to be most desirable. Creative problem solving skills involve the ability to find alternative solutions to existing problems through lateral thinking, which is more about how you think, rather than what you think.

Knowing what skills you need is just as important as knowing what skills you have and can use. Recognising the skills that you require is the first step you need to take to overcome that barrier. Many general skills can be picked up by undertaking a variety of work experience. Information on the different types of work experience can be found in the first edition of the Guide to Environmental Careers in Australia 2004.

Many alluded to a skills shortage within the industry, where there is a lack of experienced and skilled professionals compared to the demand created by the rapid growth of the industry. Due to the problems

defining the sector and identifying green collar workers as previously highlighted, detailed information on the skills gap is not known. But generally, this problem seems to more of an issue as the positions needed to be filled become more technical.

Another issue that the research highlighted is the lack of knowledge in regards to the skills needed from the employer side when recruiting environmental professionals. Recruitment specialists are having to educate organisations about what they actually need rather than what they think sounds good. This scenario can be used to your, the applicant's, advantage, as you can help organisations shape the skill set that they need and then show them how you meet that need. Recent research undertaken by Monash GreenSteps program found that most workplaces offer no green skills or sustainability training for staff and did not review staff on environmental performance, but see themselves as being "environmentally aware" and favour green-skilled candidates when hiring.

### **Educational Requirements**

Environmental education is clearly one key requirement when trying to secure employment within the environmental sector. In the survey, 70% of respondents stated that education was fundamental to their existing role, with 74% of them having studied an environmental focused course. As with any career, choosing a course of study is a strategic decision which will act as a gateway to your desired career. However, the importance of an environmental qualification differs greatly depending on the type of role you wish to secure. For example, if you wish to be an environmental engineer, you need a degree in environmental engineering. If you want to be a marketing specialist for environmental products, then an environmental qualification may not be necessary, but to have studied some environmental electives would be an advantage.

It is therefore essential for you to understand the education requirements of your chosen role / career and choose an appropriate qualification that lays the foundations for that to happen. For information on the types of qualifications and how they help lay the foundations for entry into the environmental industry, please refer to the first edition of the Guide to Environmental Careers in Australia 2004.

What was clear from the results of the survey is that certain knowledge is essential. This knowledge can be gained in a number of ways, and doesn't necessarily mean undertaking a formal qualification. However, recruitment specialists highly recommend having an environmental qualification. Having an environmental qualification makes it easier to document and display the knowledge you have. Regardless of the sector in which you want to enter, the basic knowledge required includes:

- understanding of ecological systems (hydrology, geology, biodiversity, botany, landscape ecology)
- environmental issues and implications these have on your sector
- impacts of pollution and development on the natural environment
- basic understanding of environmental law, policy and regulation

Other general education patterns identified from the research was that the vast majority of respondents are educated to a degree level or above with:

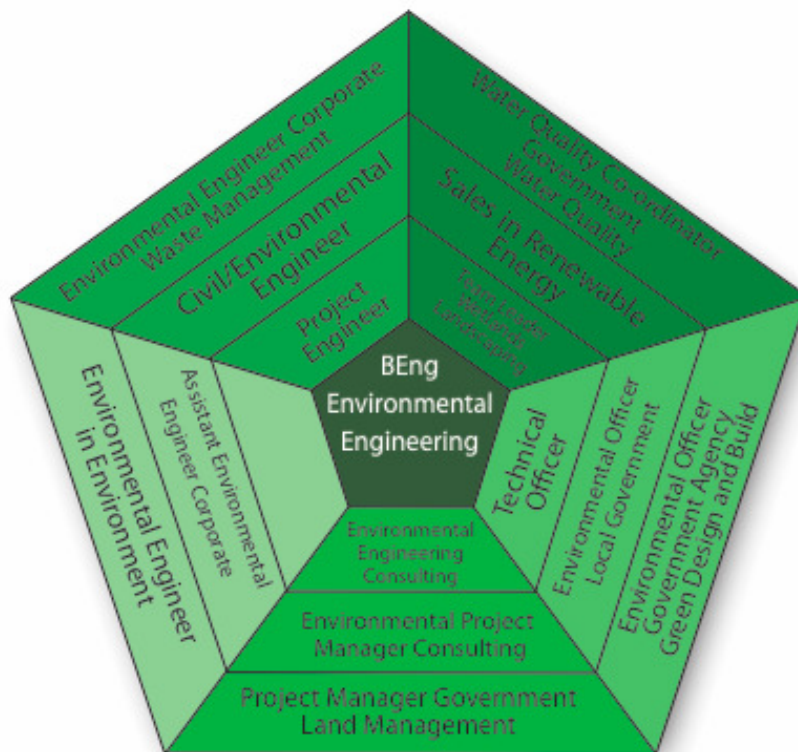
- 48% to post graduate level
- 44% to graduate level
- 6% TAFE level
- 2% high school level

Broad undergraduate degrees are suitable for a range of environmental positions and are used to get 'a foot in the door', allowing you to learn the required specific skills on the job. However, a few positions require applicants who have undertaken an honours year or a post graduate qualification. Post graduate qualifications tend to be undertaken to gain more specific knowledge and skills in a particular field of study and is used to advance career potential and employment prospects. The most common focus of the courses that they had studied at an undergraduate level was environmental science (37%), environmental management (16%) and natural resource management (12%).

The qualification you undertake may focus you toward certain areas within the industry. Our research showed that respondents who studied environmental science and environmental engineering have commonly moved into the environmental consulting field or roles that are directly involved with the environment. Those who studied environmental studies have moved into the conservation and management of biodiversity and sustainable living fields, whilst environmental health graduates have gone into local government. Those studying environmental management have gone into environmental policy, legislation, protection and enforcement, and those studying natural resource management into conservation and management of biodiversity. Those studying environmental law and sustainable development went mainly into those respective sectors. This does not mean that if you study a certain course you will go into the subsequent sector. However certain professions require certain qualifications. So you need to do careful research. This information is meant to provide food for thought and some key considerations for you to take on board.

### Five Ways from BEng Environmental Engineering

To be an environmental engineer you need an engineering qualification, preferably environmental engineering. However, if you studying this course, it doesn't mean that you have to go into that profession. The diagram below shows five different career paths from studying an BEng in Environmental Engineering.



### Career Changers

This research has identified that a large percentage of survey respondents (42%) had changed careers to move into their current environmental role. An increasing number of career changers are accessing environmental career services and this survey confirms that a large number of professionals working in the environment industry are career changers. The main reasons for undertaking this career change was to find a more rewarding role (62%), but other reasons included working with liked minded people, working in an emerging field and taking on a challenge.

Research has shown that the average number of career changes a person will go through is 5-7 changes and the average number of job changes is 29 (Dwyer, P., and Wyn, J. 2001) Today, the median

age of an Australian is nearly 37 and is set to get older. By the year 2016, people aged 45 and over will account for more than 80% of growth in Australia's labour force (Australian Bureau of Statistics, 2005). Additionally, older workers are reassessing their need to work longer, with increased pension age and life expectancy. The population bubble brings huge implications to the environmental industry if it's set to grow and meet the challenges of living and working in a sustainable world. With an increasing percentage of older aged people looking to the environmental industry as a potential career option, matched with the need to grow the industry to enable societal change, it's becoming readily accepted that recruiting career changers provides the industry with a real solution.

So how do career changers get into the industry? The research identified that the majority (65%) used transferable skills and networks (30%) to secure their current role. General career experience, life skills, environmental qualification and general transferable skills helped a lot in making this move.

The most popular positions in which career changers moved into are:

- environmental officer
- project officer
- project manager
- manager
- roles in education, training and human resources.

A larger percentage of career changers (26%) had non environmental professional roles within the environmental sector compared to the percentage of total respondents (18%) generally. This highlights that career changers use transferable skills and knowledge to get non environmental professional roles within environmental organisations as a first step into the sector. Knowledge gained in this role as well as further education is then used to move into environmental roles.

Conversely, you can use your desire for an environmental career to work for organisations that have a desire to improve their environmental performance, but don't have the resources to fully invest in that development. Research undertaken by Monash GreenSteps program found that most organisations surveyed favour green-skilled candidates when hiring. So using your current experience and skill base to change work places rather than role, to move to an organisation who is primarily looking for your skills base (i.e. Marketing) but is also going to support your interest (or existing re- training / education) in moving into a more environmental role is a very good option. To recruit a marketing professional with environmental knowledge, is a very favourable starting point for many businesses stepping into environmental management for the first time.

Other ways in which career changers have moved into the environmental industry were identified as secondment and undertaking contract and temporary work.

### ***Where to go for further information and support***

As part of the survey we asked environmental professionals the type of information they need to help further develop their career. The results identified four areas in which advice and information was required. Information about environmental courses has also been provided.

#### ***Information on career paths***

Several career profiles and pathways are featured in this guide. Other career profiles can be found in The 'Careers in the Environment' publication written by Graduate Careers Australia, available on the Environmental Jobs Network website ([www.environmentaljobs.com.au](http://www.environmentaljobs.com.au)). For more specific individual guidance on potential career paths, a visit to a career counsellor is often very useful. For a list of accredited career advisors you should contact the Career Development Association of Australia. Their website is [www.cdaa.org.au](http://www.cdaa.org.au)

#### ***Information on the industry and its trends***

As this guide clearly shows, the environmental industry is vast, grey around the edges and rapidly growing. This makes it very difficult to measure and identify patterns in growth and areas of change.

In terms of employment, the industry is affected by two factors, which in themselves are linked:



- introduction of new laws and regulation
- public pressure and demand

Increasingly, the 'Green Collar' movement is being covered and commented on within the media. Internet searches on this subject will provide a list of up to date publications. For statistics, the Australian Bureau of Statistics ([www.abs.gov.au](http://www.abs.gov.au)) provides several reports that may be of interest, but aren't environmental career specific.

- Australia's Environment: Issues and Trends published annually
- Australia at a Glance
- Australian Economic Indicators
- Labour Force Projections, Australia, 1999 - 2016

Another way to get information on industry issues and trends is to contact the sector professional association. Most of the sectors outlined in this guide have a professional association who will be up to date with policy developments, technological advancements and latest theories and methods within that specific area. Becoming a member, getting involved and attending events is a great way to find out what is going on and what that means in terms of employment opportunities. Many of these associations are listed in the appendices.

Most environmental job websites have a news page in which they list recent research, publications and news about environmental careers and education. For a list of these, please see information on jobs section below.

#### Information on environmental career networks and events

Although the need for this is growing alongside the industry, the number of services offering this is very limited. Listed below are some career networks and events that you could try to further your knowledge about the sector, the latest changes in terms of law and impacts on business and ways to make your own networks.

The Environmental Jobs Network lists events on their event page that focus on environmental employment, education, training and networking, for job seekers, students and professionals interested in relevant career-building opportunities. This includes industry conferences, seminars, training events and social networks. [www.environmentaljobs.com.au/event](http://www.environmentaljobs.com.au/event)

The Australian Environment Business Network runs forums and events for organisations and professionals on environmental issues that may impact your business and your operations. [www.aebn.com.au](http://www.aebn.com.au)

Australian Network of Environmental Defenders Offices Inc (ANEDO) organises forums and workshops designed to facilitate public participation in environmental decision making through its network of nine community environmental law centres. [www.edo.org.au/](http://www.edo.org.au/)

There are two social 'drink' based networks, greendrinks and Sustainability Drinks. Most are run bi-monthly in most major cities with the aim to connect passionate professionals within the environmental industry. [www.greendrinks.org/Australia/clist](http://www.greendrinks.org/Australia/clist) [www.sustainabilitydrinks.com/](http://www.sustainabilitydrinks.com/)

#### Information on jobs

An increasing number of environmental job websites are being set up as the number of employment opportunities increase. The most popular environmental job websites include:

- Environmental Jobs Network [www.environmentaljobs.com.au](http://www.environmentaljobs.com.au)
- NRM Jobs [www.nrmjobs.com.au](http://www.nrmjobs.com.au)
- Cooe Ads [www.cooeads.com.au](http://www.cooeads.com.au)
- Hallmark Enviro jobs [www.envirojobs.com.au/home](http://www.envirojobs.com.au/home)
- Waterjobs [www.waterjobs.com.au/](http://www.waterjobs.com.au/)
- The Greenpages [www.thegreenpages.com.au/Green-Jobs/](http://www.thegreenpages.com.au/Green-Jobs/)

General job websites that list environmental positions include:

- Career One [www.careerone.com.au](http://www.careerone.com.au)
- Seek [www.seek.com.au](http://www.seek.com.au)
- MyCareer [www.mycareer.com.au](http://www.mycareer.com.au)
- Australian Public Service (APS) jobs [www.apsjobs.gov.au/](http://www.apsjobs.gov.au/)
- Government job websites [www.jobsearch.gov.au/default.aspx](http://www.jobsearch.gov.au/default.aspx)
- State government job websites [www.careers.vic.gov.au](http://www.careers.vic.gov.au) [www.jobs.qld.gov.au/](http://www.jobs.qld.gov.au/)  
[www.jobs.wa.gov.au](http://www.jobs.wa.gov.au) [www.jobs.nsw.gov.au](http://www.jobs.nsw.gov.au) [www.vacancies.sa.gov.au](http://www.vacancies.sa.gov.au) [www.nt.gov.au](http://www.nt.gov.au)  
[www.jobs.tas.gov.au](http://www.jobs.tas.gov.au) [www.gazettes.act.gov.au](http://www.gazettes.act.gov.au)
- Local government jobs [www.lgjobs.com.au](http://www.lgjobs.com.au)
- Jobs in Planning [www.jobsinplanning.com](http://www.jobsinplanning.com)
- Plan Jobs [www.planjobs.com.au/](http://www.planjobs.com.au/)
- Engineering Jobs [www.engineeringjobs.net.au](http://www.engineeringjobs.net.au)
- Engineering Jobs Australasia [www.engjobs.net.au/](http://www.engjobs.net.au/)
- GIS Jobs [www.gisjobs.com.au](http://www.gisjobs.com.au)
- Ethical Jobs [www.ethicaljobs.com.au](http://www.ethicaljobs.com.au)

Other sites or networks to check on the Internet:

- Check individual company/organisation/ local council web pages
- Join online networks: yahoo groups, [www.sustainable.net.org.au](http://www.sustainable.net.org.au) LinkedIn

Join email alerts to be sent lists and be alerted to new positions

- State government email alerts often called Gazettes
- Environmental Jobs Network Weekly Email Bulletin
- NRM Jobs Email Bulletin

As emphasised in this research using networks and contacts is required to access the hidden job market, so develop and use networks in the following areas:

- your professional networks and contacts in your sector and organisation (colleagues and peers)
- your personal networks (family and friends)
- university clubs
- professional / Industry Associations (e.g. AWA, EDO, VPELA, Environmental Health, Australia ACEA, ACLCA, Planning Institute)
- attend events: greendrinks, careers fairs, industry conferences

Other sources to look for employment include, newspaper and industry magazines, university careers departments.

As there are an increasing number of environmental job websites, there are an increasing number of recruitment agencies specialising in the environmental industry. For a list of these visit the Environmental Jobs Network website at [www.environmentaljobs.com.au/jobs/recruitment](http://www.environmentaljobs.com.au/jobs/recruitment)

### Information on environmental courses

There are very few Australia wide resources detailing information on environmental courses. Non are comprehensive and up to date, so you will need to look at a number of sources which list different courses. For formal qualifications (undergraduate and postgraduate) the following website are a very useful place to start your research and can save you a bit of time going to and thro between educational institutions:

Environmental Jobs Network <http://www.environmentaljobs.com.au/education>

Eco-Shout [www.ecoshout.org](http://www.ecoshout.org)

Hot Courses [www.hotcourses.com.au](http://www.hotcourses.com.au) (type environmental in search engine)

EDUCAEDU (Environmental Management) [www.educaedu.com.au/environmental-management](http://www.educaedu.com.au/environmental-management)

The Green Directory [www.thegreendirectory.com.au/green-business/education-and-training.html](http://www.thegreendirectory.com.au/green-business/education-and-training.html)

Greenpages [www.thegreenpages.com.au/Green-Eco-Directory/Education+Short\\_Courses](http://www.thegreenpages.com.au/Green-Eco-Directory/Education+Short_Courses)

Or you can visit the individual university / tafe website and type in environment into the search engine. Always double check the information on the course provider website for up to date details.

Information on short courses and workshops are not listed in one central place and are therefore more difficult to research. Not for profit organisations offer short courses and workshops, so you should look at organisations websites who work in the area you are interested in. For example if you're interested in campaigning and social movement, visit The Change Agency website [www.thechangeagency.org](http://www.thechangeagency.org). Professional Associations also offer training and workshops. Many of these are listed in Appendix 1. Training and professional development organisations also deliver short courses and workshops. You can find out about these by asking professionals in your networks or doing an internet search (environmental training / environmental short courses etc).

## Chapter Five: The Rationale and Research...

### *The Rationale*

In 2004, RMIT University and the Environmental Jobs Network conducted a survey and gathered data to begin to understand the types of environmental jobs within Australia. It was the first piece of research of its kind and the information gathered was used to publish 'The Guide to Environmental Careers in Australia' filling a gap in the understanding of environmental employment and career opportunities in Australia at that time. The research also highlighted:

- the connection between the future of mankind relying, in part, on the skills and qualifications of people employed within the sector and their ability to prevent and reverse the impact humans have on the planet and achieve sustainability
- the need for extensive information about environmental careers being made available to people considering and wishing to pursue a career within the industry, and promoting the potential of the industry as a career option to others

This guide was published electronically on the Environmental Jobs Network website ([www.environmentaljobs.com.au](http://www.environmentaljobs.com.au)) and has proved to be a source of invaluable information and advice on the environmental industry, the jobs within it and what these roles involve. This information has been used by school and university students, teachers, career advisers, recruitment specialists as well as career changers alike.

Five years on, the environmental industry has grown rapidly, and with good reason. Environmental jobs, or “*Green Jobs*” or “*Green Collar Workforce*” as they have become known are jobs created to reduce our carbon emissions and environmental pollution, and change the way we live to achieve sustainability, restore ecological balance and manage global warming. Intensifying environmental issues, developing policy areas and larger environmental budgets have created a swathe of new environmental roles. In fact the growth has created whole new sectors within the industry, such as climate change and carbon trading. Existing sectors have also changed and grown as the industry has matured. Environmental roles have also been created in completely different industries, such as finance, hospitality, printing and marketing. The Environmental Jobs Network has been contacted by a huge number of people wanting to change careers into the industry and there's an increased interest in green jobs focused often on trade and non-professional employment.

However, detailed information on the growth of the environmental sector and the impact it has had on the breadth of jobs and careers in Australia, is not really known. There is a need to ascertain the significant changes in the industry and identify the range of environmental careers that are available today. There also exists a need for a broadened and ongoing understanding of what is required, now and in the future, for potential environmental employees to enter and secure employment within the sector.

RMIT University and the Environmental Jobs Network have teamed up again to undertake a national research project on environmental careers. The project was undertaken between September 2009 – February 2010 and involved three separate pieces of research to collect data from environmental professionals and environmental recruitment consultants. This research collated up to date information on environmental careers, in-depth information on the generic and environmental specific skills required to undertake these roles, the tasks required within the roles, as well as some inside information on what the roles are really like and how to get your first break into the sector.

The results of this research work is published in this guide, the outline of which is detailed in the 'Introduction' and the method of which is detailed in 'The Research' section.

## ***The Research - Methods and Statistics..***

### **Aim**

The aim of this project is to document the range of professional environmental jobs across Australia and identify the types of skills associated with these jobs.

This research was to ascertain:

- the significant changes within the industry since 2004
- what jobs are now included in the broad category of green collar jobs
- skills, education and experience required to secure these roles
- keys tasks undertaken in the range of roles that now exist
- the future trends of employment within the environment industry

This information would be used to:

- develop a career guide on the environmental industry for secondary students, graduates and career changers
- help shape promotion of environmental careers to secondary students, graduates and career changers
- provide information on potential career options and paths for potential entrants to environmental sector
- identify and campaign on any skills gap identified within the sector

### **Method**

The national project involved undertaking the following pieces of research:

- web-based employee survey of people engaged in environmental work to gather data related to their careers. Called: The Environmental Professionals Survey.
- web-based survey on existing and future employment needs and possibilities with key environmental recruitment consultants. Called The Recruitment Specialists Survey.
- telephone and email communications with environmental professionals to develop environmental career profiles.

The surveys built on the experiences of the 2004 research work and subsequent publication The Guide to Environmental Careers In Australia 2004 and expanded the range of questions slightly, to gather data on the following:

- categories of professional environmental employment
- common position titles - the title by which the respondents' positions were designated
- most common activities - instances of the types of activities that the respondents in each category are engaged with
- Education and skills - the types of educational qualifications obtained by the respondents, and the skills that they considered to be most useful
- employment – length of their career, and the sectors in which they have been employed during their careers.
- which skills are essential to their employment – specifically the skills that are described as 'generic skills' and 'sustainability specific skills', and what they consider to be the three main skills that have been important in their early career, and in their current position
- personal profile - a summary of the structural factors of their position (such as salary), their personal comments on the job, and suggestions for anyone wanting to enter the field of employment
- trends - current trends and future demand from their sector and the environmental industry in general

The survey content was developed by the project team and uploaded onto the Survey Monkey web based survey application. The content of the survey can be found in Appendix 2. This application was chosen because it is both simple and efficient for both the researcher and participant and the responses are anonymous.



Participants were invited to take part in the survey by an email detailing information about the research and a link to the survey. The email was distributed through a wide selection of third party networks (see appendix 1). Information about the research, text introducing the survey, a link and invitation to take part was distributed through the following networks:

- Environmental Jobs Network website and E-Bulletin
- Environmental professional associations (Such as EIANZ, ICLEI, Environmental Business Australia)
- Environmental consultancies
- Environmental not for profit organisations
- Federal and state government environmental departments in each state
- Local governments and local government associations in each state
- Environmental recruitment specialists
- Online environmental events calendars / blogs / networks

A full list of organisations who distributed the information through its networks can be found in the appendices.

### *The Team*

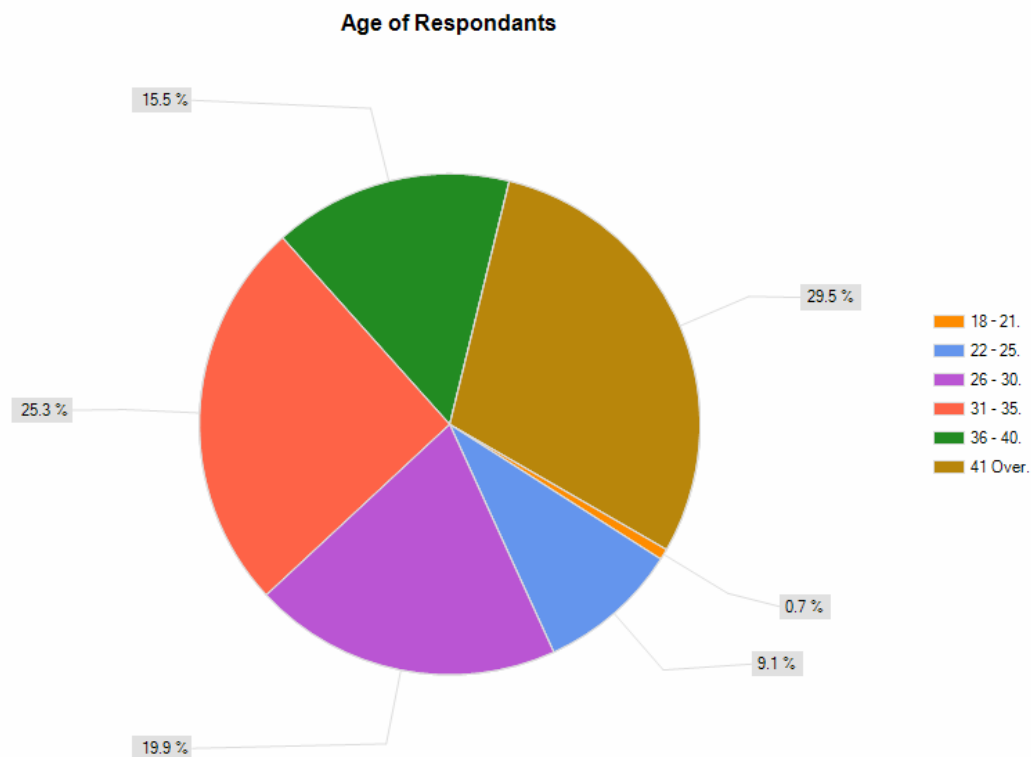
The project was driven by Associate Professor Ian Thomas, Discipline Head, Environment and Planning, Teresa Day, Researcher and Writer, RMIT University and Tracey Skinner Office Manager and ECO Coordinator of the Environmental Jobs Network.

### *Survey Base*

The survey received 432 responses from environmental professionals and 4 from environmental recruitment consultants, over the month that the survey was open. To understand the information that is contained in this guide, its useful to understand who took part in the survey.

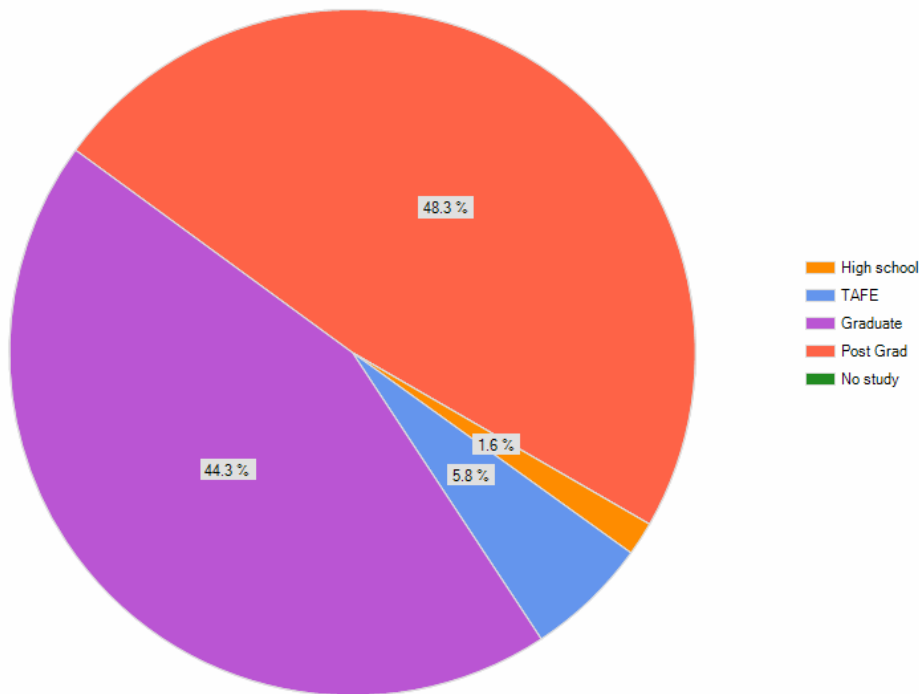
### *Statistics*

The survey was completed by professionals of all ages, with 30% being aged 41 years and over and 25% being aged 31 – 35 years. The group with the smallest response was the 18 – 21 year olds (1%).

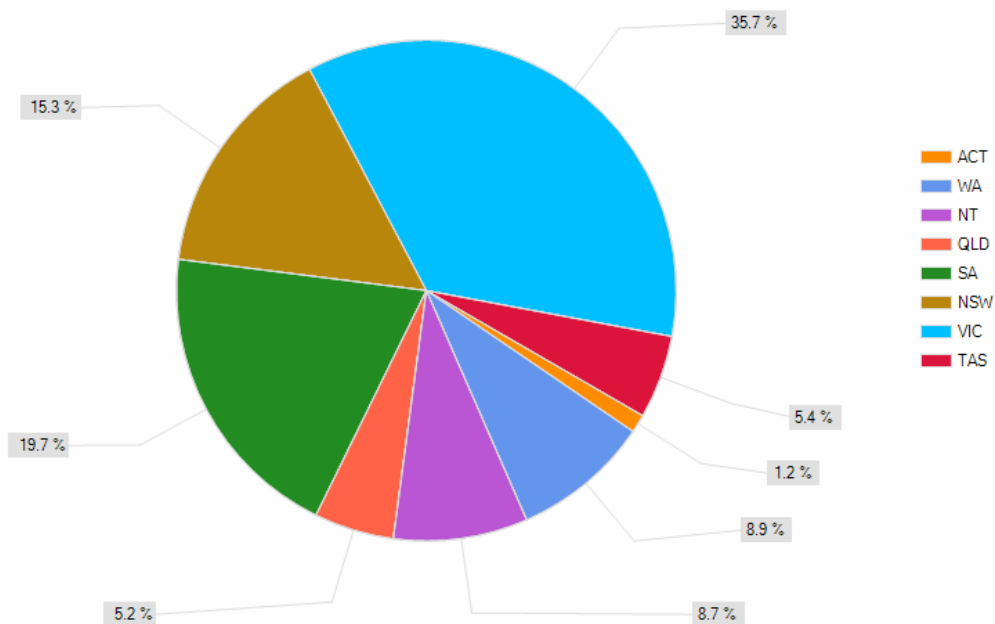


This can be explained when looking at the education level achieved, with 49% post graduates, 43% graduates, 6% TAFE and 2% high school level.

**Level of Education of Respondants**



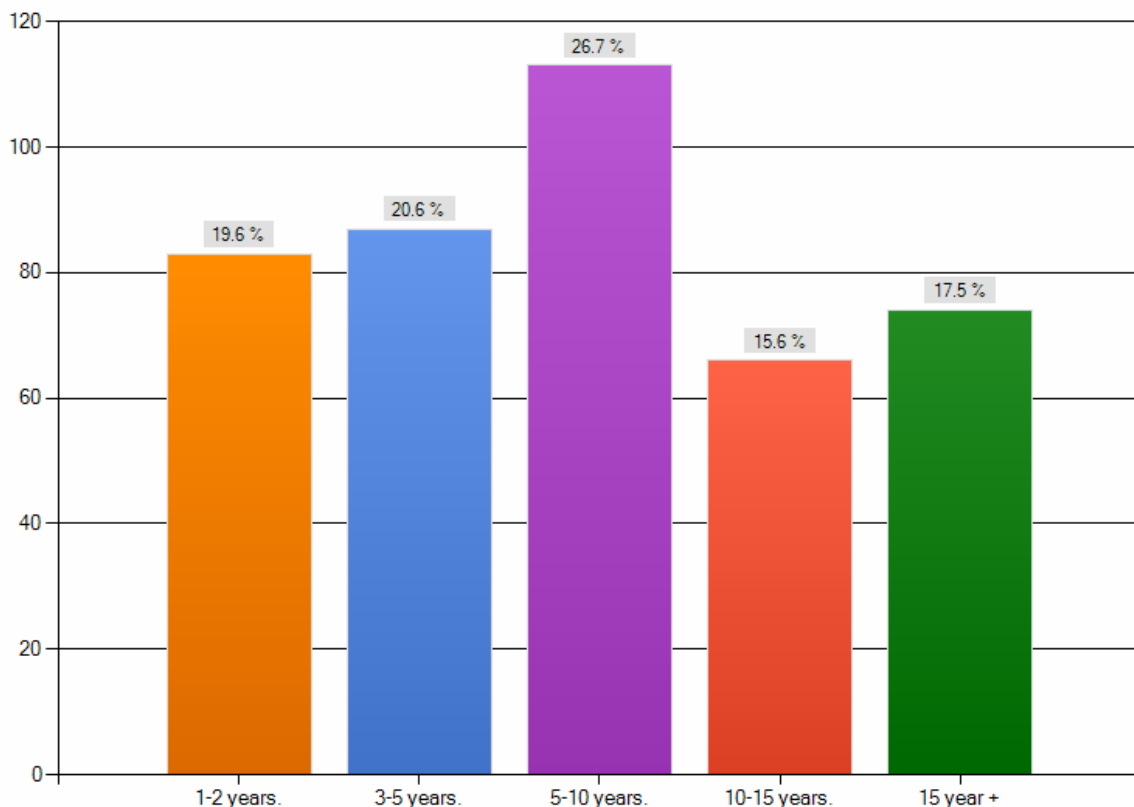
**Where the Respondants are based**



The survey is fairly evenly split in terms of gender, with 44% male, 55% female (1% undisclosed). A deliberate effort was made to ensure that the survey received responses from all over Australia, rather than just one or two states. Responses were made from all states, Victoria (36%), South Australia (20%), New South Wales (15%), Northern Territory (9%), Western Australia (9%), Queensland (5%), Tasmania (5%) and ACT (1%).

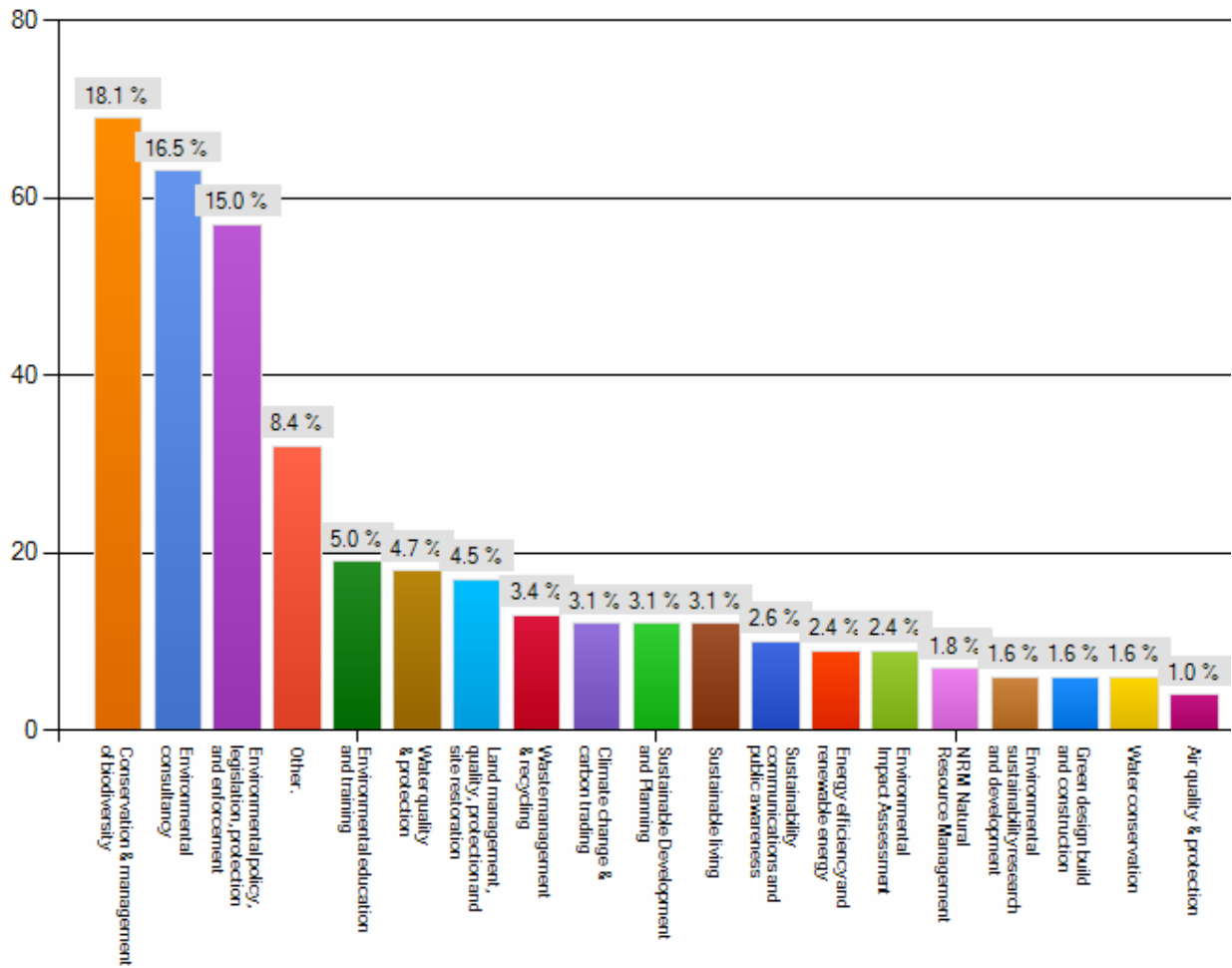
With regards to length of employment within the industry the most frequent answer was 5 – 10 years (27%), with a further 21% of respondents having worked for 3 – 5 years. The majority of the respondents saw themselves as an 'environmental professional working in an environmental organisation' (62%), 14% as 'environmental professionals working in a non environmental organisation' and 18% as 'non environmental professionals working in an environmental organisation'. The vast majority (80%) worked full time, with others working part time (11%), on contract (3%) or having their own business (2%).

**Length of time Respondants have worked in Environmental Sector**



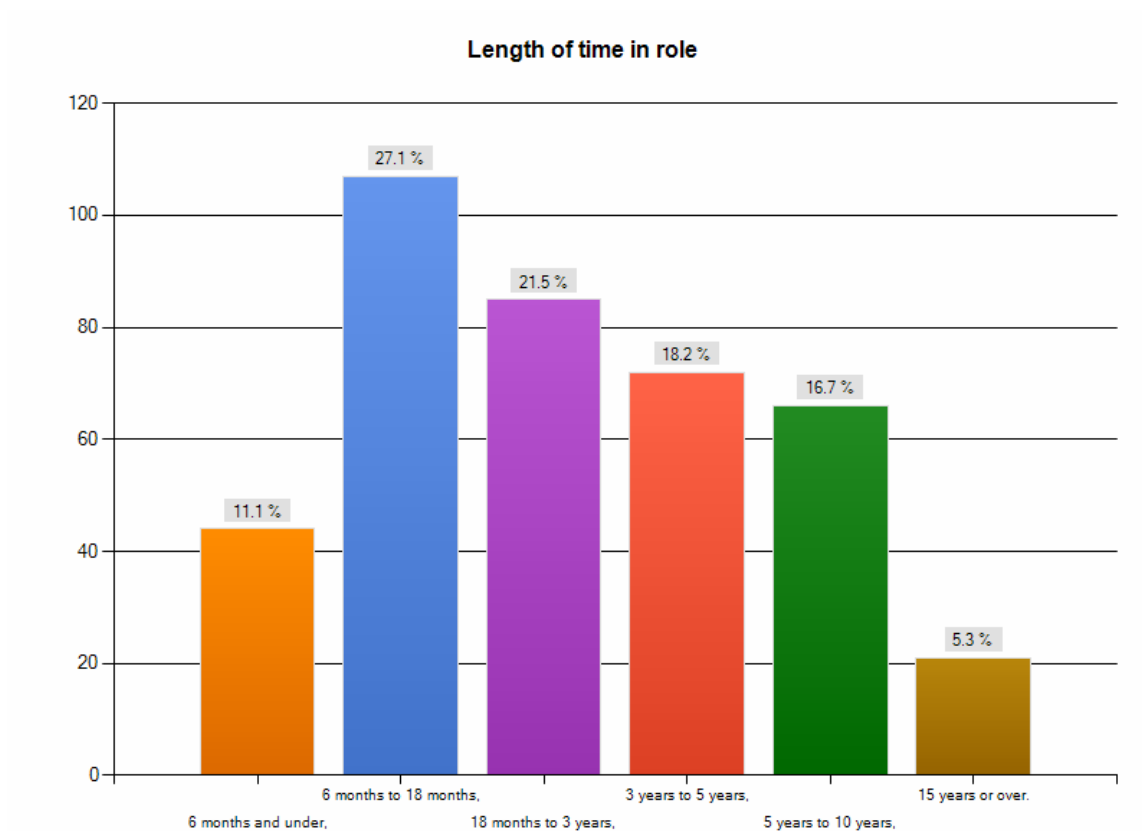
*Where do they work?* We received responses from people who work in 19 of the 21 sectors that were listed. The top three most popular sectors were conservation and management of biodiversity (18%), environmental consultancy (17%) and environmental policy, legislation, protection and enforcement (15%). No responses were received for agriculture and organic food and ecotourism and sustainable transport sectors. Details of the percentage of each of the other sectors is detailed in 'the Careers' section under each of the sectors.

### The sector in which the respondents worked

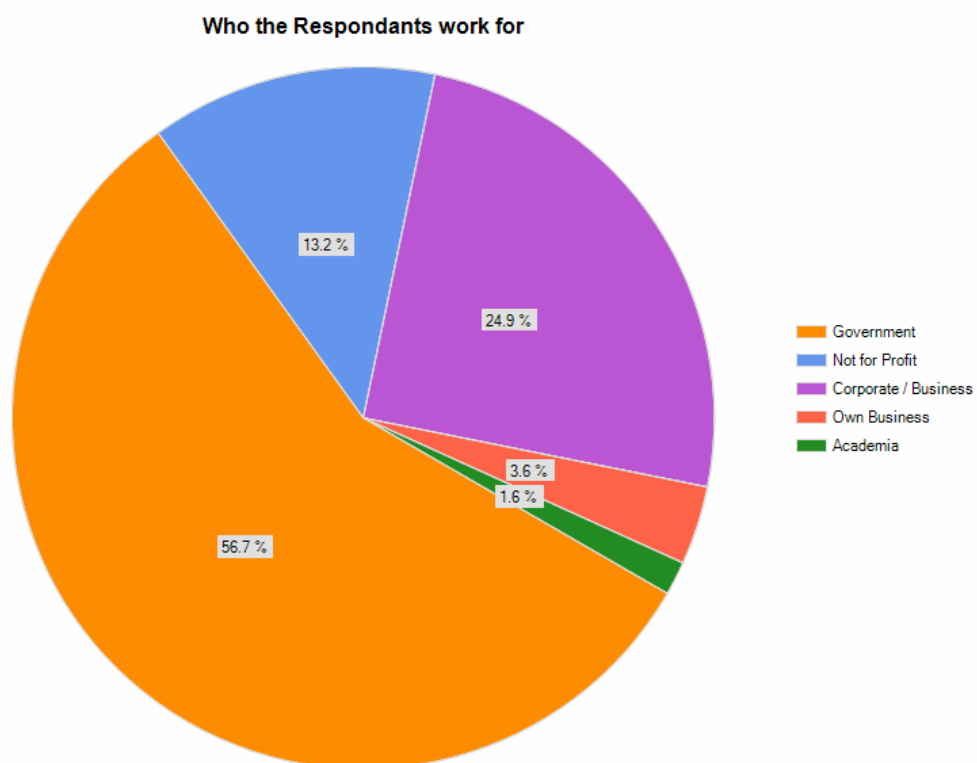


Of the prescribed job titles detailed within the survey, the most frequent ones were Project Manager, Environmental Officer, Project Officer, Environmental Scientist, Manager, Consultant, Policy Officer, Environmental Consultant, Environmental Protection Officer, Scientist, Education Officer and Environmental Manager.

The respondents had been in their roles for a various amount of time, with 27% in the role for 6 months to 18 months, 22% for 18 months to three years and 5% for 15 years and over.



The majority of the respondents worked for government (57%) whilst others worked for corporate/business (25%) not for profit (13%), own business (3%) and academia (2%).





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## Appendix 1 – Organisations and Networks used to promote the survey

### Organisations

360 Environmental  
Acacia Environmental Management  
AECOM  
Alternative Technology Association  
Aquaterra  
ATMA Environmental  
Atmospheric Solutions  
Australian Association for Environmental Education  
Australian Business Network NSW  
Australian Conservation Foundation  
Australian Contaminated Land Consultants Association  
Australian Environmental Labelling Association  
Australian Government - Department of Climate Change  
Australian Government - Department of the Environment, Water, Heritage and the Arts  
Australian Land and Groundwater Association (ALGA)  
Australian Water Association  
Baralga Environmental Services  
Beyond Neutral  
Blyss Personnel  
BMT WBM  
Bradman Recruitment  
Bush Heritage Australia  
Carbon Alliance  
Carbon Neutral  
Carbon Reduction Institute  
CERES  
Chamber of Commerce NT  
Clean Energy Council  
Clean Up Australia  
Connell Wagner  
Conservation Volunteers Australia  
Department for Environment and Heritage - SA  
Department of Environment and Resource Management  
Department of Environment, Parks, Heritage and the Arts - TAS  
Department of Natural Resources, Environment and the Arts and Sport - NT  
Department of Primary Industries and Water - TAS  
Department of the Environment, Climate Change, Energy and Water - ACT  
Department of Water - WA  
Dept of Environment and Climate Change and Water - NSW  
Dept of Industry and Investment - NSW  
Dept Sustainability and Environment - VIC  
Earth Systems  
Earthwatch  
Eco logical Australia  
ECO Recruitment  
Ecowise Environmental  
Energy Conservation Systems  
Energy Networks Australia  
Enviro Search Global

Environment Protection Authority - NT  
Environment Protection Authority (SA)  
Environment Protection Authority Tasmania  
Environment Resources Management  
Environment Victoria  
Environmental Business Australia  
Environmental Defender Office  
Environmental Institute of Australia and New Zealand  
Environmental Protection Authority - VIC  
Environmental Protection Authority of Western Australia  
Forestworks  
Global Sustainability RMIT University  
Going Solar  
Graham Brown and Assocs  
Greening Australia  
Habitat Environmental Consulting  
Hyder Consulting  
International Council for Local Environmental Initiatives  
Jules Remay Executive  
Kay Farnell Recruiting  
Local Government and Shires Associations of New South Wales (LGSA).  
Local Government Association of Tasmania  
Local Government Association - South Australia  
Local Government Association of Queensland  
Local Government Association of the Northern Territory  
Minerals Council Australia  
Municipal Association of Victoria  
Office of Water - NSW  
Plastics and Chemicals Industries Association  
Port Philip Eco Centre  
Principal Consulting  
Rural Solutions  
S Jobs  
SEE Sustainability Consulting  
Stormwater Industry Association  
Sustainability Victoria  
Sustainable Living Foundation  
The Climate Institute  
The Environmental Jobs Network  
The Ethos Foundation  
The WA Local Government Association  
The Wilderness Society  
Total Earth Care Pty Ltd  
Turning Green Consultants  
URS  
Victorian Association for Environmental Education  
Victorian Planning and Environmental Law Association  
Waste Management Association of Australia  
WWF

### Websites

ECO Shout  
EcoDirectory  
EnviroInfo

Facebook  
G Magazine  
Go Greener Australia  
GreenDrinks List  
Greenleap

Linked In  
Sustainability Drinks  
The Green Directory  
UWA Green Drinks

## Appendix 2 – Survey Content

### Environmental Professionals Survey

#### Introduction

Since the last environmental job survey five years ago, the environmental sector has grown considerably. Detailed information on the impact this growth has had on breadth of jobs and careers within Australia, is very limited. To ensure the sector continues to secure professionals and suitable personnel, now and in the future, detailed information on career options and career potential is essential to promote the sector as a great career choice. This is where your help and this survey steps in.

This survey will ascertain the range of professional environmental or green jobs across Australia and identify skills and education requirements for, and basic tasks of, these roles. This information will be used to provide career advice and guidance to those wanting to work, and currently working, in the environmental sector.

The survey is being undertaken by RMIT and Environmental Jobs Network and should be completed by professionals whose main focus in their work (or the organisation they work for) plays a role in reducing environmental pollution and degradation and changing the way we live to restore ecological balance and achieve sustainability.

The survey takes 25 minutes to complete. We understand that this is a big request, but the information you provide will be used to help the sector to continue to secure professionals and suitable personnel, now and in the future. It also gives you time to reflect upon your career. The survey closes on the 30th November 2009.

We are also looking for individuals to provide information about their career profiles that will be featured in the finished guide (the profiles will be anonyms so that your identity and organisation will not be identifiable). If you are interested in contributing your profile please provide your name and telephone number where indicated.

#### Questions

Q1. How old are you?

Multiple choice: 18 – 21. 22 – 25. 26 - 30. 31 - 35. 36 - 40. 41 Over.

Q2. Male / Female / Not disclosed

Q3. Which state are you based in?

Multiple choice: ACT. WA. NT. QLD. SA. NSW. VIC. TAS

Q4. How long have you worked in the Environmental Sector?

Multiple choice: 1-2 years. 3-5 years. 5-10 years. 10-15 years. 15 year +

Q5. How would you describe yourself? (NB an environmental professional is an individual who has an environmental qualification or environmental specific skill that is used within their role)

Multiple choice:

Environmental professional working in an environmental organisation

Environmental professional working in a non environmental organisation

Non environmental specific professional working in an environmental organisation

Other

Q6. As part of the guide, several career profiles will be included. Would you be interested in providing more information about your career at a later date that could be included in the guide?

Q7. In which industry, within the environmental sector, do you work?

Multiple choice:

Agriculture and organic food. Air quality and protection. Climate change and carbon trading. Conservation and management of biodiversity. Energy efficiency and renewable energy. Environmental consultancy. Environmental education and training. Environmental Impact Assessment. Environmental policy, legislation, protection and enforcement. Environmental sustainability research and development. Green design build and construction. Land management, quality, protection and site restoration. NRM Natural Resource Management. Sustainability communications and public awareness. Sustainable Development and Planning. Sustainable living. Sustainable

Transport and Eco Tourism. Waste management and recycling. Water conservation. Water quality and protection. Other

Q8. What is your job title? To help the analysing of results, please choose / detail your job title by either using generic job titles listed below ( IE if you are a water conservation policy officer, Multiple choice. Please see master job title list for

Q9. Type of role?

Multiple choice: Full time. Part time. Casual. Volunteer. Contract. Consultant. Own business. Other

Q10. Length of time in role?

Multiple choice: 6 months and under. 6 months to 18 months. 18 months to 3 years. 3 years to 5 years. 5 years to 10 years. 15 years or over.

Q11. How did you find out about and apply for this role?

Multiple choice: Advert on job website. Advert in newspaper / magazine. Organisations website. Recruitment consultant. Graduate Program / Intake. Through word of mouth (friends). Through word of mouth (professional networks). Through previous role. Speculative Approach / cold call. Other.

Q12. Did you change careers when entering this role? If yes, please answer the next three questions. If no, please go to question 9.

Multiple choice: Yes. No.

Q13. What activity did you do to achieve this career change? (can select more than one)

Multiple choice: Retrained. Returned to education. Undertook unpaid work to gain experience. Used contacts / networks. Used transferable skills. Other (i.e. complete luck)

Comments box detail

Q14. Why did you undertake this career change? (can select more than one)

Multiple choice: More rewarding role. Better work life balance. Increased salary. Better career potential. Work with like-minded people. Challenge. Other (i.e. my mates suggested it)

Q15. What do you think, helped you get the job? (can select more than one)

Multiple choice: General career experience. Specific environmental experience. General skills. Specific skills. Environmental (academic) qualification. Networks in environmental industry. Other (i.e. dynamic personality)

Comments box detail

Q16. What would you say are the top three generic skills that have enabled you to work in this role? (Please select three) See Appendix 4 for list.

Q17. What would you say are the top three environmental / sustainability specific skills, knowledge or experience that have enabled you to work in this role? (i.e. enviro system knowledge, GIS Mapping) (List two of each below)

Q18. Has the education you have undertaken been fundamental to this role?

Multiple choice: Yes. No

Q19. What are the most common activities / tasks you undertake within this role? Please list up to 5 bullet points.

Q20. Who do you work for?

Multiple choice: Government. Not for Profit. Corporate / Business. Own Business. Academia.

Option to provide name of employer.

Q21. This question is optional, but any information you can provide will help our understanding of the profession. What is the annual salary scale for your role (based on full time hours)?

Multiple choice \$0 (volunteering). \$1K - \$30K. \$31K - \$40K. \$41K - \$50K. \$51K - \$75K. \$76K - \$100K. \$101K - \$125K. \$126K - \$150K. \$151K plus

Q22. How do you describe your job to friends or to people you meet? (your personal take on the job)

Q23. Do you have one suggestion / tip for anyone looking to secure this role? (not necessarily yours, but from someone familiar with the environment sector!)



Q24. To what level are you educated?

Multiple choice: High school. TAFE. Graduate. Post Grad. No study

Q25. Was this qualification Environmental focussed?

Multiple choice: Yes. No.

Q26. If yes, please choose one broad focus. If no, please go on to next question.

Multiple choice: Environmental Science. Environmental Engineering. Environmental Studies / humanities. Environmental Education. Environmental Economics. Environmental Health. Environmental Management. Natural Resource Management. Environmental Policy and Law. Sustainable Development and Planning. Sustainable Management and Corporate Social Responsibility. Other

Q27. What was the main subject/module/unit that has been valuable in your career to date? Please give details

Q28. What would you say are the top three most useful generic skills / attributes that enabled you to work in the environmental / sustainability sector in the early stages of your career (NB not just current role)? please select three. See Appendix 4 for list

Q29. What would you say are the top three specific environmental / sustainability skills or knowledge that have enabled you to work in the environmental / sustainability sector (NB Not just current role)? Please list three

Q30. Where have you worked predominately?

Multiple choice: Government. Not for Profit. Corporate / Business. For self. Academia. Other

Q31. Please list brief details of the previous roles you have had. (Please list up to 2 to give an indication of career pathway. Detail job title, industry worked in and time in role)

Q32. How would you describe your plans for the future (in terms of your career)?

Multiple choice: Plan to stay in current industry / role. Plan to stay in current industry and move up the ladder. Plan to further my education in this area. Plan to undertake training related to my role / area. Plan to move to another industry within the environmental sector. Plan to move out of the environmental sector altogether. Plan to retire from this role. Other.

Q33. Where would / do you go to get information about jobs / careers in the environmental sector?

Q34. How can the Environmental Jobs Network (EJN) or other employment organisations help you with your career development needs? (can select more than one)

Multiple choice: Information on career paths. Information on the industry and its trends. Information on career news. Information on environmental career networks and events. Information on jobs. Provide advice by running workshops. Provide advice by one on one sessions. Provide advice by running internet blogs / interactive sessions. Provide advice by providing online tutorials. Provide practical information on job application. Undertake more detailed research into the sectors skills needs and job market. Other.

Q35. Looking at the last twelve months, has your industry and role been impacted by the current economic downturn? If yes, how?

Q36. What do you think is the key challenge and key opportunity that currently faces your industry (as identified in Section 3, Question 1) in terms of skills, employment and sector development (not environmental issues)?

Q37. What do you think is the key challenge and key opportunity that currently faces the environmental sector as a whole in terms of skills, employment and sector development (not environmental issues)?

### **The Recruitment Specialist Survey**

The Recruitment specialist survey contained the above questions but where aimed at an organisation:

Q3. Q4. Q7. Q16. Q23. Q35. Q36. Q37

Additional questions:

- What is your turnover in number of positions filled per year?
- What are the key challenges in recruiting for the environmental sector? (Lack of Proper Education/Training / Lack of Experience / Lack of Skills / Poor Work History/References / Lack of Preparation / Work Ethic)?

## Appendix 3 - Industry and Job Classification

### Industry Breakdown

Agriculture, Food, Organics  
Air quality and protection  
Climate Change and Carbon Trading  
Conservation and Management of biodiversity  
Wildlife  
Flora  
National parks and protected areas  
Marine parks  
Energy Efficiency and Renewable Energy  
Environmental consultancy  
Environmental education  
Environmental Sustainability Policy and legislation  
Environmental Sustainability Research and development  
Green Design Build and Construction  
Land quality protection and site restoration  
Natural Resource Management  
Fisheries  
Forests  
Minerals  
Sustainability communications and public awareness  
Sustainable Living  
Sustainable Transport  
Waste management and recycling  
Water conservation  
Water quality and protection  
Other. Please specify.

### Job titles

Administrator  
Affairs Officer  
Auditor  
Campaigner  
Communications Officer  
Community Affairs Officer  
Compliance and Enforcement Officer  
Computer Modeler  
Conservation Officer  
Consultant  
Coordinator  
Decontamination Officer  
Development Officer  
Education Officer  
Efficiency Officer  
Engineer  
Environmental Affairs Officer  
Environmental Auditor  
Environmental Campaigner  
Environmental Consultant  
Environmental Engineer  
Environmental Health Officer  
Environmental Impact Analyst  
Environmental Liaison Officer  
Environmental Manager  
Environmental Officer  
Environmental Planner

Environmental Policy Officer  
Environmental Protection Officer  
Environmental Resource Manager  
Environmental Scientist  
Environmental Technician  
Field or Laboratory Technician  
Impact Analyst  
Lecturer  
Legal Officer  
Liaison Officer  
Manager  
Modeler  
Planner  
Planning Officer  
Policy and Economic Analyst  
Policy Officer  
Primary or Secondary School Teacher  
Professor  
Programs Manager  
Project Manager  
Project Officer  
Protection Officer  
Regenerator  
Regulatory Affairs Officer  
Remediation Officer  
Research Analyst  
Research Assistant  
Research Associate  
Research Economist  
Research Officer  
Research Scientist  
Resource Manager  
Resource Officer  
Resources Manager  
Scientist  
Sustainability Officer  
Sustainability Auditor  
Sustainability Campaigner  
Sustainability Consultant  
Sustainability Manager  
Sustainability Planner  
Sustainability Policy Officer  
Technical Advisor  
Other. Please specify

2. If your job title is specific and is not detailed above, please write full title in space provided. (IE Ecologist or Agronomist)

## Appendix 4 - General Skill Listing in Survey

Questions referring to identifying general skills provided a list of multiple choice of:

**Communication** - for productive and harmonious relations between employees and customers

- Writing
- Spoken/Verbal
- Customer Service

**Team work** - for productive working relationships and outcomes

- Co-ordination
- Instructing
- Negotiation / Persuasion / Build Argument
- Timeliness
- Honesty
- Ability to get along with others

**Problem Solving Skills** - to contribute to productive outcomes

- Using mathematics to solve problems
- Using scientific rules and methods to solve problems
- Identifying complex problems and provide solutions
- Judgment and Decision Making
- Troubleshooting
- Initiative and enterprise

**Resource Management Skills** – Management and monitoring performance.

- Personnel
- Financial Resources
- Material Resources
- Management of self
- Long term planning and organising

**Technical Skills**

- Computer Skills
- Equipment maintenance
- Installation of equipment / systems
- Operation and control of equipment / systems
- Operation monitoring & analysis
- Technology Design

**Learning Skills** - for ongoing improvement and expansion in employee and company operations and outcomes

**Critical Thinking** — Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problem

**Other**