Who are the Green Collar Workers?

Defining and identifying workers in sustainabiity and the environment

A report by Connection Research in conjunction with the Environment Institute of Australia & New Zealand

Supported by the Dept of Environment and Climate Change NSW

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Connection Research is an Australian market research and consultancy company specialising in analysis of sustainability issues. Services are provided in four interrelated areas:

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- **Building Industry and Trades:** Sustainable and green building products, attitudes and actions of building tradespeople, home automation and digital technology in the home
- **Carbon and Compliance:** The green collar workforce, carbon measurement and monitoring, carbon footprint abatement practices.

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Who Are The Green Collar Workers?

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FOREWORD

Welcome to the "Who are the Green Collar Workers?" report. This is the first serious attempt in Australia to define just who these people are. However they are defined, we believe that members of the Environment Institute of Australia and New Zealand (EIANZ) are included in the definition.

The EIANZ is the professional association for environmental practitioners, established to:

- facilitate interaction among environmental professionals
- promote environmental knowledge and awareness
- advance ethical and competent environmental practice.

Evolution or Revolution is an initiative by the NSW division of the EIANZ to engage the wider environmental profession, determine what and who the Green Collar Worker is, and what they need in order to support them to be better professionals and contribute towards addressing environmental issues.

The Evolution or Revolution initiative is a three stage program intended to engage the Green Collar Worker and establish what the profile of the environment/sustainability profession is, so that the profession can be supported more effectively. The three phases are:

1. Public engagement and event held at the Customs House in Sydney, with over 200 people, who listened to a panel discussion and provided feedback.
2. Considered follow-up: this report.
3. A report back to the profession and a celebration with a Green Tie ball at Taronga Zoo on Earth Day, 28 March 2009. This was a great success.

The aim of this report is to review definitions of the Green Collar Worker from around the globe and arrive at an appropriate definition for Australia. A definition is important, as it will provide the foundations for statistics, audits, curricula, regulation, policy and innovation.

We want to draw a line in the sand, provide some rigour around a definition, and catalyse the development of metrics that will help move Australia towards a more ecologically sustainable economy. We believe this report is an excellent start.

Special thanks to the Department of Environment and Climate Change NSW for supporting this research.

Tom Davies
NSW President
Environment Institute of Australia and New Zealand

EXECUTIVE SUMMARY

The term "green collar worker" is increasingly being used to describe people working in green, sustainability or environmental jobs, but there is no standard definition of the term. The purpose of this report is to examine the different meanings that people have attached to the term, and to attempt to arrive at a workable definition and classification.

There are two general approaches to a definition of green collar workers: definition by occupation, and definition by industry – we have combined these two approaches. What this means is that green collar workers may exist in any industry according to their occupation or role (e.g. sustainability manager). It also means that green collar workers may exist depending on industry type (e.g. green plumber).

This leads us to a two-part definition of green collar workers:

I. ***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.***

II. ***Services, clerical, sales and semi-skilled workers who work in green organisations.***

This definition is reasonably straightforward, but it hinges on the further definition of what constitutes "green". The terms "green", "environmental" and "sustainable" are often used interchangeably to describe companies, people or technologies that do "greenish things". But they do not mean the same thing. This report makes a distinction between "environmental" and "sustainable".

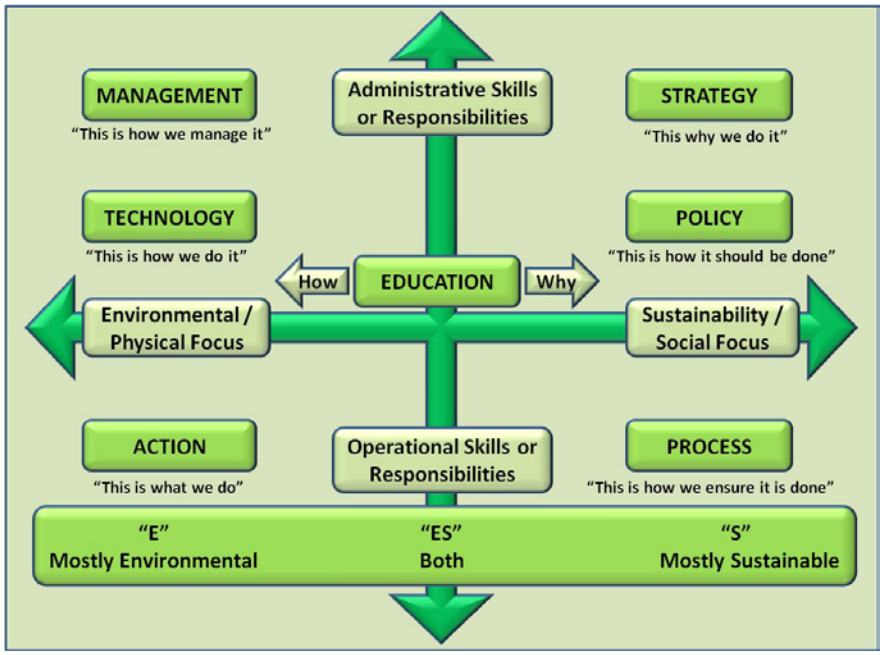
Environmental practices tend towards specific physical processes, and sustainable practices tend towards more generalised processes, or policies and attitudes. Jobs and organisations may combine significant elements of both. They are not opposing areas, but they do represent different tendencies on a number of conceptual spectrums.

By looking at different skills levels and making this distinction between environmental and sustainable, we can construct a conceptual framework of green collar workers (over page) based on skill levels and areas of responsibility that defines their area of focus.

This framework identifies seven broad types of green collar worker: those involved in management, strategy, technology, policy, education, action and process. Many green collar jobs fall in more than one of these areas, but if they do, the two areas are usually contiguous. Education falls in the middle, as it can be either environmental or sustainable, or a combination of both. Nor does it fall neatly into administrative or operational.

The horizontal axis moves from a mostly environmental focus, which we have labelled “E”, to a mostly sustainable focus, which we have labelled “S”. Although the terms are often used interchangeably, the distinction between environmental and sustainable allows some structure of this confusing area to be created. It allows us to place job types and job functions into more specific categories. This helps to develop job descriptions that are suitable for use with official statistics, and are also easy to understand and use for general applications.

A Green Collar Worker Conceptual Framework



The Australian Bureau of Statistics and Statistics New Zealand use standardised coding for jobs and skills (ANZSCO - ANZ Standard Codes for Occupations) and for industry sectors (ANZSIC – ANZ Standard Industry Codes). We propose 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, and industry (see over page).

This system allows any green collar job to be coded. It also means that all job descriptions accord largely with standard Australian Bureau of Statistics and Statistics New Zealand industry, occupational and skills classifications (in the last three characters). This is essential for using the descriptions in conjunction with official statistical data used by all government and most industry policy-makers.

This report shows that here is no easy way to define the green collar worker. But it also shows that it is possible to identify who they are, which is the first step to reaching them and understanding their needs, their skills, and their aspirations. That should be the next stage of research.

A Green Collar Worker Coding System

Environmental / Sustainable

E	Mostly environmental
ES	Both environmental and sustainable
S	Mostly sustainable

Occupation

1	Managers
2	Professionals
3	Technicians and trades workers
4	Community and personal service workers
5	Clerical and administrative workers
6	Sales workers
7	Machinery operators and drivers
8	Labourers

Skills Levels

1	Degree
2	Diploma
3	Certificate III with experience or Certificate IV
4	Certificate II or III
5	Certificate I or Semi-skilled

Industry

A	Agriculture, Forestry and Fishing
B	Mining
C	Manufacturing
D	Electricity, Gas, Water and Waste Services
E	Construction
F	Wholesale Trade
G	Retail Trade
H	Accommodation and Food Services
I	Transport, Postal and Warehousing
J	Information Media and Telecommunications
K	Financial and Insurance Services
L	Rental, Hiring and Real Estate Services
M	Professional, Scientific and Technical Services
N	Administrative and Support Services
O	Public Administration and Safety
P	Education and Training
Q	Health Care and Social Assistance
R	Arts and Recreation Services
S	Other Services

Example: An electrical engineer with a university degree working for a power utility on green policy issues, would be classified as “S31D” (i.e. mostly sustainable , ANZSCO Occupation = 3, ANZSCO Skill Level = 1, ANZSIC Electricity Industry = D).

CHAPTER ONE
DEFINING "GREEN COLLAR"

Who are the green collar workers? How many of them are there, in Australasia and worldwide? What sorts of jobs do they hold? How should those jobs be defined?

These are important questions. Environmental and sustainability issues have moved to the forefront of public debate as the realities of climate change, and society's response to it, gain higher visibility. Those who set public policy and industrial strategy are increasingly addressing these issues, but in many cases they are flying blind because of the lack of definition of an area that is now of paramount importance.

The term "green collar worker" is increasingly being used to describe people working in green, sustainability or environmental jobs, but there is no standard definition of the term. The purpose of this report is to examine the different meanings that people have attached to the term, and to attempt to arrive at a workable definition. The report then develops a taxonomy – a classification – of green collar workers that is a necessary first step to a comprehensive analysis of their roles and positions.

This report has been written by sustainability analyst group Connection Research, with support from the Department of Environment and Climate Change NSW (DECC) and the Environment Institute of Australia and New Zealand (EIANZ). It is intended as the first step in a larger research project that will determine how many green collar workers there are in Australia and New Zealand, to identify them, and reach as many of them as possible through a market research survey that will ask them about such matters as skills availability and skills shortages, technologies being employed, and the demands of their jobs.

Little research has been done, in Australasia or internationally, in this area. The most significant local exercise by far is the CSIRO's 2008 report **Growing the Green Collar Economy**[i]**.** This document models scenarios and looks at labour market issues, but as the report itself states (p 18):

> *"Research for this project indicated that current information on green skills and workforce capabilities is very poor. No systematic and comprehensive data gathering appears to have occurred with regard to the skills and knowledgebase of business leaders and work force to be necessary to make the shift to a low carbon or 'environmentally friendly' economy.*
>
> *The Australian Bureau of Statistics gathers and reports figures on employment by occupation group and industry, unemployment and labour force utilisation, but provides little insight into the availability – or scarcity – of skills and the wider supply dimensions of*

energy and water sensitive design and implementation across different economic sectors. There is also data available on tertiary education, vocational education and training as well as work related training. These sets of information are weakly linked and there is no systematic information gathered on curricula that would support certain skills required or workplace related training that would support sustainability approaches in key sectors".

This report is an attempt as the first step suggested by the CSIRO – for "systematic and comprehensive data gathering". It is difficult to know where to start.

The term "green collar worker" is at least 30 years old – it was first used in hearings before the US Congress in 1976[ii]. It is a variant on the often used terms "white collar" and "blue collar", used to describe professional and manual workers respectively.

But what is a green collar worker? There are many definitions, but no consensus. Online encyclopaedia Wikipedia has a lengthy definition:

> *A **green-collar worker** is a worker who is employed in the environmental sectors of the economy. Environmental green-collar workers (or Green Jobs) satisfy the demand for green development. Generally, they implement environmentally conscious design, policy, and technology to improve conservation and sustainability.*
>
> *Formal environmental regulations as well as informal social expectations are pushing many firms to seek professionals with expertise with environmental, energy efficiency, and clean renewable energy issues. They often seek to make their output more sustainable, and thus more favourable to public opinion, governmental regulation, and the Earth's ecology.* [iii]

Wikipedia is not alone. There are many other definitions of green collar workers and green collar jobs.

The broadest definition is one from US green consultancy Viridus. Founders Furqan Nazeeri and Mike DiPietro say that "everyone has a green collar job", indicating that green matters are so important that the work we all do affects the environment in some way. That may be true, but it is not helpful for our purposes. Fortunately, they also give a more specific definition:

> "*anyone who has the word 'environment,' sustainable, 'green' or something similar in their title on their business card is a green collar worker.*" [iv]

Computacenter, a leading independent provider of IT infrastructure services in Europe, states that:

> *"a green collar worker is someone who performs green tasks at work as well as in the household, exclusively based on a personal desire to be environmentally aware."* [v]

Computacenter further defines a green collar worker as someone who:

- recycles household waste – paper, glass, plastic
- prefers to cycle to work if at all possible
- belongs to a body or organisation concerned with environmental issues e.g. Greenpeace, Friends of the Earth etc.
- has made energy saving alterations to their home
- encourages the use of energy saving technology at work and lobbies for change
- recycles paper at work
- campaigns for Green IT in the workplace
- is interested in future energy efficient technology e.g. solar power, wind power, etc.
- raises money for environmental charities
- avoids any product that they perceive to be harmful to the environment
- encourages others to do some or all of the above.

This is an example of definition by example, always a cumbersome approach. It also defines by attitude and actions, rather than outcomes, and its phrase "exclusively based on a personal desire" is limiting.

Green collar definitions are often approached by defining the nature and scope of the job. One approach is to use the existing blue and white collar worker terms to define green collar jobs. The US environmental news radio station EnvironMinutes [vi]defines green collar jobs as:

> "*blue collar jobs that help protect the planet.*"

Raquel Rivera Pinderhughes, Professor of Urban Studies at San Francisco State University, says that:

> *"green collar jobs are blue collar jobs in green businesses – that is, manual labour jobs in businesses whose products and services directly improve environmental quality"* [vii]

But this approach ignores environmental consultants and many other professionals. The US online news network Alternative Energy News says that:

> "g*reen collar jobs involve products and services that are environment-friendly. Any organisation that seeks to improve upon the environment is considered 'green'; and if it employs individuals to that affect, then it has created green collar jobs. Green collar jobs include any that involve the design, manufacture, installation, operation, and/or maintenance of renewable energy and energy efficiency.*" [viii]

By this definition both blue and white collar workers are considered green if they are employed in a "green" company. But the definition is limited by its narrow focus on renewable energy and energy efficiency. In a more recent report by UNEP (United Nations Environment Program), green collar jobs are defined both by industry and occupation:

> *"We define green jobs as work in agricultural, manufacturing, research and development, administrative, and service activities that contribute substantially to preserving or restoring environmental quality. Specifically, but not exclusively, this includes jobs that help to protect ecosystems and biodiversity; reduce energy, materials, and water consumption through high efficiency strategies; de-carbonise the economy; and minimise or altogether avoid generation of all forms of waste and pollution."*[ix]

The Australian Conservation Foundation does not mention industry or occupation in its definition of the term, but introduces a new perspective by putting emphasis on the skills level of the green collar worker:

> *"Green jobs or green-collar jobs contribute to better environmental outcomes or increased sustainability. Green-collar jobs range from low-skill, entry-level positions to high-skill, higher-paid jobs, and include opportunities for advancement in both skills and wages."* [x]

There is no shortage of definitions. For this reason, we have listed some examples to illustrate how diverse these definitions are. These definitions approach "green collar" in different ways, but they mostly overlook, or exclude, important aspects of many other green collar definitions. In other words, there is no absolute consensus.

Estimates of the number of green collar workers in Australasia vary from under 50,000 to over 300,000, depending on what definitions are used, and the extent to which the numbers are extrapolated from international estimates. It is impossible to arrive at a meaningful figure if we can't define what we are attempting to measure.

So, the aim is to develop a workable definition in the contemporary Australasian context that can aid further research. That is the purpose of this report.

CHAPTER TWO
OCCUPATIONS, INDUSTRIES AND SKILLS

An examination of the definitions of green collar workers and green collar jobs (see Chapter One) indicates that there are two general approaches: definition by occupation, and definition by industry. Some definitions use one approach, some use the other, and some use a combination of the two. As Jim Cassio, author of the US publication **Green Careers Resource Guide**, says:

> *"green collar jobs can be defined either by the nature and purpose of the job, or by the nature and purpose of the employer."*[xi]

The Occupational Approach

The occupational approach is based on the actual activity being performed, irrespective of industry type. The main problem with this approach is the difficulty of adequately defining the possible range of activities. The Australian Bureau of Statistics and Statistics New Zealand's **Australian and New Zealand Standard Classification of Occupations** (ANZSCO) document (ABS 1220.0)[xii] runs to 703 pages. Its only mention of "green" is in relation to greenkeepers on golf courses. The word "sustainability" does not appear in the document, though there are a number of job titles containing the words "environment" or "environmental".

ANZSCO has eight major Groups of occupation, broken into 42 "Sub-Major Groups", which are further broken down into Unit Groups and Occupations. For example:

- Major Group 2: Professionals
    - Major Group 23 Design, Engineering, Science and Transport Professionals
        - Minor Group 234 Natural and Physical Science Professionals
            - Unit Group 2343 Environmental Scientists
                - Occupation 234312 Environmental Consultant

A significant challenge is that many of the jobs that for the purposes of this exercise might be regarded as green collar are classified by the ABS, or by employers or even by the individuals themselves, as something entirely different.

As well as occupations, ANZSCO also defines five skills levels, depending upon the level of training or experience needed to perform a job. These are described in detail in Appendix II of this report. Each occupation in the ANZSCO taxonomy is ascribed one to three skills levels – e.g. managers and professionals tend to be at levels 1 and 2, and labourers at level 5.

Green collar workers are found at all skills levels – the manager of an environmental consultancy is a green collar worker, and so is a labourer helping build a wind farm. Some skills, at every level, are easily transferable between industries, while others are not. But people with higher skills levels are more likely to be defined as green collar workers whatever industry they are in, while people with lower skills levels are more likely to be defined as green collar workers based on their industry.

We take both occupations and skills levels into account in our proposed taxonomy.

The Industry Approach

The industry approach differs significantly. A good example of it is found in the October 2008 report **Current and Potential Green Jobs in the US Economy**, commissioned by the US Conference of Mayors. This report takes into account all industries in the US Standard Industry Classification (SIC) that can be regarded as "green", and defines all those who work in these industries as green collar workers.

> *We define these (industries) as: any activity that generates electricity using renewable or nuclear fuels, agriculture jobs supplying corn or soy for transportation fuel, manufacturing jobs producing goods used in renewable power generation, equipment dealers and wholesalers specialising in renewable energy or energy-efficiency products, construction and installation of energy and pollution management systems, government administration of environmental programs, and supporting jobs in the engineering, legal, research and consulting fields.*[xiii]

By this methodology, all jobs in all defined industries are regarded as green collar jobs. The problem with this approach is that many people in those industries may have jobs that are not directly involved in green activities, such as receptionists or bookkeepers or labourers. And it ignores the many people involved in green activities but who do not work in those industries, such as sustainability officers in banks, or environmental journalists, or many consultants.

The Australian Bureau of Statistics and Statistics New Zealand also define industry sectors using a similar method to the US SIC codes. These are called the **Australian and New Zealand Standard Industrial Classification** (ANZSIC) codes (ABS 1292.0)[xiv].

As with ANZSCO, ANZSIC has a hierarchical structure, with 19 Divisions broken into 86 Subdivisions, which are further broken down into Groups and Classes. For example:

- Division D, "Electricity, Gas, Water and Waste Services"
    - Subdivision 26 "Electricity Supply
        - Group 261 "Electricity Generation
            - Class 2619: Other Electricity Generation (which includes renewable energy)

Occupation by Industry

Clearly, trying to define green collar workers in Australasia by referring only to green industries is inadequate. A better way might be to take into account both occupation and industry. By mapping ANZSCO occupation codes against ANZSIC industry codes it is possible to build a grid of job types by industry sector. This is a useful starting point in job classification, as it brings some structure to green collar worker job descriptions and to the development of a suitable taxonomy.

The tables in Appendix II show the ANZSCO and ANZSIC coding and classification down to the second level. The many hierarchical levels mean that there are literally thousands of industry types and occupational classifications, and many hundreds of thousands of permutations of occupation by industry. Some of these are indisputably green collar workers, but most are definitely not, and some fall into the grey area in between, with their status as green collar workers dependent upon the definitions we might adopt as we develop our taxonomy. Nevertheless, such a grid is useful as a conceptual tool to begin to reconcile the occupational and industry approaches.

ANZSIC Industry by ANZSCO Occupation (First Level)

ANZSIC by ANZSCO	Managers	Professionals	Technicians & Trade Workers	Community & Personal Service Workers	Clerical & Admin Workers	Sales Workers	Machinery Operators & Drivers	Labourers
Agriculture, Forestry and Fishing								
Mining								
Manufacturing								
Electricity, Gas, Water and Waste Services								
Construction								
Wholesale Trade								
Retail Trade								
Accommodation and Food Services								
Transport, Postal and Warehousing								
Information Media and Telecommunications								
Financial and Insurance Services								
Rental, Hiring and Real Estate Services								
Professional, Scientific and Technical Services								
Administrative and Support Services								
Public Administration and Safety								
Education and Training								
Health Care and Social Assistance								
Arts and Recreation Services								
Other Services								

We believe it is important to retain ABS and Statistics NZ definitions wherever possible, because any research that might be done in terms of green collar worker issues or sizing may need to be overlaid on standard demographic data. This report takes the approach that green collar workers may exist in any industry, depending on their occupation. It therefore tends towards the occupational definition, but it is also true that industry plays a role, particularly at the lower end of the skills range. We take industry into account in our proposed taxonomy.

CHAPTER THREE
GREEN, ENVIRONMENTAL, SUSTAINABLE – AND OTHER CONSIDERATIONS

The terms "green", "environmental" and "sustainable" are often used interchangeably to describe companies, people or technologies that do greenish things. But they do not mean the same thing.

"Green" has become a shorthand term to describe the wide range of issues, processes, products and services that relate to sustainability and the environment. We do not propose to define it further. But what do "environmental" and "sustainability" mean? The terms are not synonymous.

What is "Environmental"?

"Environmental", strictly speaking, means nothing more than "relating to an environment"[xv]. And "environment" is itself a broadly defined word that can mean the total aggregation of everything around us, or the influences on us – we talk of the "political environment" or the "educational environment".

The environment is usually defined in terms of ecology – a scientific term which refers to the relationship of an organism (including man) with the physical environment around it – the atmosphere, the earth and the minerals contained within it, the water in the oceans and rivers and lakes, and the like.

In our context, "environmental" refers to processes, technologies and actions that affect these things. It does not necessarily refer to their protection or their continued viability, though the word has to many people acquired these connotations in recent years.

What is "Sustainable"?

"Sustainable" means "designed or developed to have the capacity to continue operating perpetually, by avoiding adverse effects on the natural environment and depletion of natural resources"[xvi]. The World Commission on Environment and Development (The Brundtland Commission), in an often quoted definition, says that sustainable development is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs"[xvii].

In the context of this report, sustainability includes both environmental and social sustainability, and can be defined as the maintenance and protection of the physical or ecological environment.

The terms “environmental” and “sustainable” are often used interchangeably. However, the distinction between them is important, particularly in light of any attempt to define green collar workers, who may be working in or have skills in the environmental area, the sustainable area, or both.

There are a number of key distinctions between the two terms. It is not the purpose of this report to describe these in detail. But it is clear that there is a distinct overlap. In general, environmental practices tend towards specific physical processes, and sustainable practices tend towards more generalised processes, or even intangible areas like policies and attitudes.

This dichotomy is represented in the chart below. This distinction is useful as it helps to develop a green collar worker taxonomy that illustrates the differences between jobs in the environmental and sustainable areas.

Environmental and Sustainable

Jobs and organisation may tend to being more environmental or more sustainability focused, or they may combine significant elements of both. They are not opposing areas, but they do represent different tendencies on a number of conceptual spectrums.

We take this environmental / sustainable dichotomy into account in our proposed taxonomy.

Other Considerations

There are some other factors that should be considered when attempting to define or taxonomise green collar workers:

- **The organisation's commitment to the environment.** Different organisations have different levels of commitment to green and environmental issues. For example, a forestry company that works hard at renewing the environment and which follows corporate social responsibility practices might be considered green, while one that cuts down trees for woodchips to maximise profits and leaves the ground barren might not.

  If the organisation is not green, even employees with green attitudes or performing green tasks may not be green collar workers. It would depend upon the extent to which they are able to change or influence corporate values.

- **Mixed workloads.** Many workers may do some of their work in areas that might be considered green, and some of their work in other areas. For example, a lawyer may specialise in environmental cases but spend a significant amount of time on other work.

- **Job titles.** These are a poor indicator of green collar workers as they are often incorrectly applied by HR departments or recruitment agencies. Job specifications need to be examined closely before any job can be properly defined. Job specifications often bear little relationship to the work actually performed (see Appendix III).

Specifying, classifying and defining green collar workers and green collar jobs is a conceptual minefield. Nevertheless, we attempt to develop a definition and taxonomy in the next chapter.

CHAPTER FOUR
A GREEN COLLAR WORKER DEFINITION, FRAMEWORK AND TAXONOMY

Towards a Definition

As discussed earlier in this report, there are three factors that describe a green collar worker: the skills and responsibilities of the individual, the industry and nature of the organisation for which they work, and whether the job and the organisation tend towards the environmental or sustainable end of the green spectrum.

In attempting to classify green collar workers our starting point is the ANZSCO occupational codes, which are broadly ranked from higher levels of skill or responsibility at the top to lower levels of skill or responsibility at the bottom. Virtually all of these occupations at the second ("Sub-Major Group") level contain some jobs that are classed as green collar, but very often it depends upon the nature of the organisation they work for.

Only in some specialist occupations – often defined at the fourth ("Unit Group") or fifth ("Occupation") levels – are all workers within that occupational code green, solely by virtue of their skills or responsibilities.

In the first three ANZSCO groups – Managers, Professionals and Technicians, and Trade Workers, green collar workers are usually defined by their specific skills or responsibilities, though they may also be defined by the nature of their organisation. In the last five groups, green collar workers are almost always defined by the nature of organisation they work for.

This leads us to a two-part definition of green collar workers:

III. 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.

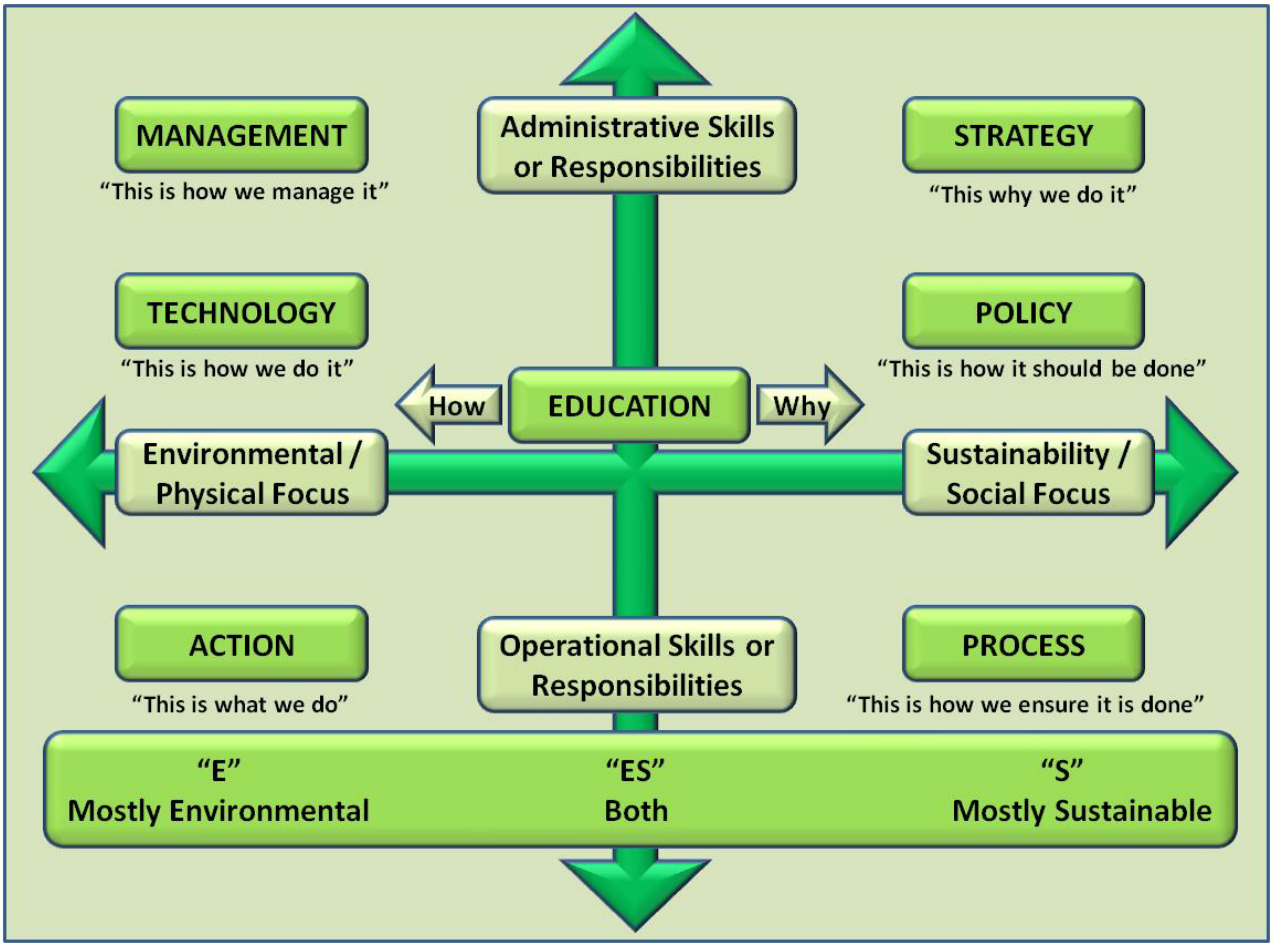
IV. Services, clerical, sales and semi-skilled workers who work in green organisations.

This definition is reasonably straightforward, but it hinges on the further definition of what constitutes a green organisation. Our distinction between environmental and sustainable (see Chapter Three) is useful here. Also, it is useful to define "organisation" as including a department or business unit within a larger organisation.

A Framework

When we examine the ANZSCO occupational codes in light of the distinction made in Chapter Three between environmental and sustainable, we can construct a conceptual framework of green collar workers based on skill levels and areas of responsibility that leads to their area of focus:

A Green Collar Worker Conceptual Framework



This framework has two axes – a vertical skills / responsibilities axis, and a horizontal environmental / sustainable axis. The vertical axis is based broadly on the ANZSCO groups (see Appendix II), and the horizontal axis (more of a dividing line) is based on the distinction between environmental and sustainable made in Chapter Three.

This structure identifies seven broad types of green collar worker: those involved in management, strategy, technology, policy, education, action and process. Many green collar jobs fall in more than one of these areas (see Appendix Two), but if they do, the two areas are

usually contiguous. Education falls in the middle, as it can be either environmental or sustainable, or a combination of both. Nor does it fall neatly into administrative or operational.

The horizontal axis moves from a mostly environmental focus, which we have labelled “E”, to a mostly sustainable focus, which we have labelled “S”. As discussed in Chapter Three, this distinction between environmental and sustainable is not clear-cut, and made less so because the two terms are often used interchangeably.

Nevertheless, this framework is useful because it brings some structure to what is a confusing area. It allows us to place job types and job functions into more specific categories. By summarising the ANZSCO Groups and applying them against environmental and sustainable type jobs we can arrive at descriptions that conform to ABS and Statistics New Zealand’s standards. This helps to develop job descriptions that are suitable for use with official statistics, and are also easy to understand and use for general applications (see below).

ANZSCO Groups and Green Collar Jobs

MANAGERS	ENVIRONMENTAL	SUSTAINABLE
Chief Executives, General Managers and Legislators	Senior executives who manage environmental organisations	Senior executives who manage sustainability organisations and government legislators and senior public servants within sustainability departments and agencies
Farmers and Farm Managers	Most farmers and farm managers who deal the environmental aspects of farming. Excludes managers of agribusinesses who treat farming as a simple production process	
Hospitality, Retail and Service Managers	Senior managers of organisations that provide ecotourism, sell environmental products, or provide services to environmental organisations	Senior managers of organisations that provide services to environmental and sustainable organisations
Other Managers	... in environmental organisations	... in sustainability organisations

PROFESSIONALS

Arts and Media Professionals		Sustainability and environmental journalists and authors
Design, Engineering, Science and Transport Professionals	… in environmental organisations, or who have environmental skills and responsibilities	… in sustainability organisations, or who have sustainability skills and responsibilities
Education Professionals	Teachers, lecturers and trainers who teach environmental subjects	Teachers, lecturers and trainers who teach sustainability subjects
IT/ICT Professionals	IT/ICT professionals in environmental organisations	"Green IT" professionals in any organisation
Legal, Social and Welfare Professionals	Lawyers and social workers who specialise in environmental issues	Lawyers and social workers who specialise in sustainability issues
Other Professionals	... in environmental organisations	... in sustainability organisations

TECHNICIANS, SKILLED AND SEMI-SKILLED WORKERS

Engineering, IT/ICT and Science Technicians	… in environmental organisations, or who have environmental skills and responsibilities	… in sustainability organisations, or who have sustainability skills and responsibilities
Construction Trades Workers		Building tradespeople involved in the sustainable building industries
Skilled Animal and Horticultural Workers	… in environmental organisations, or who have environmental skills and responsibilities	
Other Technicians	... in environmental organisations	... in sustainability organisations
Services, clerical, sales and semi-skilled workers	... in environmental organisations	... in sustainability organisations

A Taxonomy

What is a taxonomy? Any dictionary will define it as a "method of classification". Taxonomies can be hierarchical, like the ANZSIC and ANZSCO codes or the well-known Linnaean classification of living things into kingdoms, orders, genera, and species.

But they need not be hierarchical. Taxonomies can also take the form of a simple coding system. We propose such a taxonomy for green collar workers and green collar jobs, based on the definitions discussed in this report. We propose 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 discussed in this report:

- **Environmental or sustainable,** as defined in Chapter Three. Alphabetical, as below.
- **Occupation**, as defined by the eight ANZSCO Major Groups. Numeric 1 to 8.
- **Skills level**, as defined by the five ANZSCO Skill Levels. Numeric 1 to 5.
- **Industry**, as defined by the 19 ANZSIC divisions. Alphabetical A to S.

Industry, occupation and skills levels are explained in Chapter Two and Appendix II of this report, and summarised below:

Environmental / Sustainable

E	Mostly environmental
ES	Both environmental and sustainable
S	Mostly sustainable

Occupation

1	Managers
2	Professionals
3	Technicians and trades workers
4	Community and personal service workers
5	Clerical and administrative workers
6	Sales workers
7	Machinery operators and drivers
8	Labourers

Skills Levels

1	Degree
2	Diploma
3	Certificate III with experience or Certificate IV
4	Certificate II or III
5	Certificate I or Semi-skilled

Industry

A	Agriculture, Forestry and Fishing
B	Mining
C	Manufacturing
D	Electricity, Gas, Water and Waste Services
E	Construction
F	Wholesale Trade
G	Retail Trade
H	Accommodation and Food Services
I	Transport, Postal and Warehousing
J	Information Media and Telecommunications
K	Financial and Insurance Services
L	Rental, Hiring and Real Estate Services
M	Professional, Scientific and Technical Services
N	Administrative and Support Services
O	Public Administration and Safety
P	Education and Training
Q	Health Care and Social Assistance
R	Arts and Recreation Services
S	Other Services

This taxonomy, or coding system, allows any green collar job to be coded. It also means that all job descriptions accord largely with standard ABS and Statistics New Zealand industry, occupational and skills classifications (in the last three characters), essential for using the descriptions in conjunction with official statistical data used by all government and most industry policy-makers.

An electrical engineer with a university degree working for a power utility on green policy issues, for example, would be classified as "S31D" (predominantly sustainable , ANZSCO Occupation = 3, ANZSCO Skill Level = 1, ANZSIC Electricity Industry = D).

The following table lists some typical green collar jobs and their coding under this system:

Job Description	Sust / Env	Occupation Code	Skills Level	Industry Code	Code
Electrical engineer with a university degree working for a power utility on policy issues	S	3	1	D	S31D
Construction worker helping build a government-funded solar power facility for a remote community	E	8	5	E	E85E
Director of an environmental consultancy advising organisations on lowering their carbon footprint	ES	1	1	M	ES11M
Sustainability manager helping senior management in a credit union devise their environmental strategy	S	2	2	K	S22K
Sustainability manager helping to transform the culture of the organisation to become more sustainable	S	2	2	Depends on industry	S22x
Lawyer specialising in sustainability and/or environmental issues.	S	2	1	M	S21M
Journalist writing about environmental issues for a major newspaper (or an Internet newsletter)	ES	2	1	J	ES21J
Manufacturer's or retailer's technician installing solar panels or insulation in people's homes	E	3	4	M	E34M
Market researcher analysing green issues for corporate clients	S	2	1	M	S21M
Transport company OH&S officer confirming compliance with environmental standards	S	3	2	I	S32I
Dairy farmer struggling with reduced water allocations and climate change	E	1	3	A	E13A
High school teacher teaching students about green issues	ES	2	1	P	S21P

An Australasian green collar worker taxonomy

By the insertion of sustainable and environmental codes, existing standard occupation and industry classification can be transformed into a workable Australasian green collar worker taxonomy. This allows any green collar job to be easily defined, based largely on standard criteria. It will also inform further research, such as measuring the size of the Australasian green collar worker workforce.

APPENDIX I
FURTHER RESEARCH

This report has proposed a green collar worker taxonomy. The next step is to use the taxonomy to determine the number of green collar workers in Australasia, and how many exist for each job type and industry. They can then be identified and surveyed, with a view to:

- defining and building a profile of the green collar worker community
- understanding their roles, attitudes, experience, etc.
- identifying skills gaps (personal and industry-wide)
- determining priorities to help the green industry and its many stakeholders to address these issues.

The Environment Institute of Australia and New Zealand has initiated an **Evolution or Revolution** program to determine who should be included in the definition of green collar worker, to find out who they are, and to reach them through a comprehensive market research study. A key aspect of the study is to identify skills and skills gaps. The primary research can then be blended with other information to build a complete picture of green collar workers in Australasia in 2009, offering insights into what green collar workers themselves believe to be the key issues confronting their profession.

A Two Phase Development Program

Connection Research proposes a research program that will comprise a number of key phases, across several industry sectors.

Phase One - Taxonomy
The first part of the research project consists of a White Paper containing a preliminary taxonomy of green collar workers, distributed to EIANZ members on Earth Day, 28 March 2009. This report comprises this first phase.

Phase Two – Primary Research
The Department of Environment and Climate Change NSW has identified a number of key industry sectors important to existing and future Green Skills projects being undertaken by the Department:

- Agriculture, Forestry and Fishing
- Mining
- Manufacturing

- Electricity, Gas, Water and Waste Services
- Construction
- Financial and Insurance Services
- Professional, Scientific and Technical Services (partner is EIANZ)
- Public Administration and Safety

Connection Research proposes developing partnerships with organisations in each by industry sector, then conducting a detailed primary research project in each sector as these partnerships are developed.

Each project will entail a number of steps:

1. Develop a database (with email addresses) of as many of these people as possible, by industry sector.

2. A detailed email survey of these people, using both qualitative and quantitative questions designed to elicit as much useful information as possible consistent with the objectives of the study.

3. Preliminary analysis of these survey results to a focus group (one per sector) to discuss and further dissect the issues.

4. Final analysis of findings, both quantitative and qualitative, to include a final taxonomy and demographic modelling to determine the size and composition of the green collar workforce in Australia.

APPENDIX II
ANZSCO AND ANZSIC CODES

ANZSCO Major and Sub-Major Groups

1 MANAGERS
11 Chief Executives, General Managers and Legislators
12 Farmers and Farm Managers
13 Specialist Managers
14 Hospitality, Retail and Service Managers

2 PROFESSIONALS
21 Arts and Media Professionals
22 Business, Human Resource and Marketing Professionals
23 Design, Engineering, Science and Transport Professionals
24 Education Professionals
25 Health Professionals
26 ICT Professionals
27 Legal, Social and Welfare Professionals

3 TECHNICIANS AND TRADES WORKERS
31 Engineering, ICT and Science Technicians
32 Automotive and Engineering Trades Workers
33 Construction Trades Workers
34 Electrotechnology and Telecommunications Trades Workers
35 Food Trades Workers
36 Skilled Animal and Horticultural Workers
39 Other Technicians and Trades Workers

4 COMMUNITY AND PERSONAL SERVICE WORKERS
41 Health and Welfare Support Workers
42 Carers and Aides
43 Hospitality Workers
44 Protective Service Workers
45 Sports and Personal Service Workers

5 CLERICAL AND ADMINISTRATIVE WORKERS
51 Office Managers and Program Administrators
52 Personal Assistants and Secretaries
53 General Clerical Workers
54 Inquiry Clerks and Receptionists
55 Numerical Clerks
56 Clerical and Office Support Workers
59 Other Clerical and Administrative Workers

6 SALES WORKERS
61 Sales Representatives and Agents
62 Sales Assistants and Salespersons
63 Sales Support Workers

7 MACHINERY OPERATORS AND DRIVERS
71 Machine and Stationary Plant Operators
72 Mobile Plant Operators
73 Road and Rail Drivers
74 Store persons

8 LABOURERS
81 Cleaners and Laundry Workers
82 Construction and Mining Labourers
83 Factory Process Workers
84 Farm, Forestry and Garden Workers
85 Food Preparation Assistants
89 Other Labourers

Source: ABS cat no.1220.0

ANZSCO Skills Levels

Level 1

Occupations at Skill Level 1 have a level of skill commensurate with a bachelor degree or higher qualification. At least five years of relevant experience may substitute for the formal qualification. In some instances relevant experience and/or on-the-job-training may be required in addition to the formal qualification.

Level 2

Occupations at Skill Level 2 have a level of skill commensurate with one of the following:

- NZ Register Diploma or
- AQF Associate Degree, Advanced Diploma or Diploma.

At least three years of relevant experience may substitute for the formal qualifications listed above. In some instances relevant experience and/or on-the-job-training may be required in addition to the formal qualification.

Level 3

Occupations at Skill Level 3 have a level of skill commensurate with one of the following:

- NZ Register Level 4 qualification
- AQF Certificate IV or
- AQF Certificate III including at least two years of on-the job training.

At least three years of relevant experience may substitute for the formal qualifications listed above. In some instances relevant experience and/or on-the-job-training may be required in addition to the formal qualification.

Level 4

Occupations at Skill Level 4 have a level of skill commensurate with one of the following:

- NZ Register Level 2 or 3 qualification or
- AQF Certificate II or III.

At least one year of relevant experience may substitute for the formal qualifications listed above. In some instances relevant experience may be required in addition to the formal qualification.

Level 5

Occupations at Skill Level 5 have a level of skill commensurate with one of the following:

- NZ Register Level 1 qualification
- AQF Certificate I or
- compulsory secondary education.

For some occupations a short period of on-the-job training may be required in addition to or instead of the formal qualification. In some instances, no formal qualification or on-the-job training may be required.

Source: ABS cat no.1220.0

ANZSIC Divisions and Subdivisions

A Agriculture, Forestry and Fishing A
01 Agriculture
02 Aquaculture
03 Forestry and Logging
04 Fishing, Hunting and Trapping
05 Agriculture, Forestry and Fishing Support Services

B Mining
06 Coal Mining
07 Oil and Gas Extraction
08 Metal Ore Mining
09 Non-Metallic Mineral Mining and Quarrying
10 Exploration and Other Mining Support Services

C Manufacturing
11 Food Product Manufacturing
12 Beverage and Tobacco Product Manufacturing
13 Textile, Leather, Clothing and Footwear Manufacturing
14 Wood Product Manufacturing
15 Pulp, Paper and Converted Paper Product Manufacturing
16 Printing (including the Reproduction of Recorded Media)
17 Petroleum and Coal Product Manufacturing
18 Basic Chemical and Chemical Product Manufacturing
19 Polymer Product and Rubber Product Manufacturing
20 Non-Metallic Mineral Product Manufacturing
21 Primary Metal and Metal Product Manufacturing
22 Fabricated Metal Product Manufacturing
23 Transport Equipment Manufacturing
24 Machinery and Equipment Manufacturing
25 Furniture and Other Manufacturing

D Electricity, Gas, Water and Waste Services
26 Electricity Supply
27 Gas Supply
28 Water Supply, Sewerage and Drainage Services
29 Waste Collection, Treatment and Disposal Services

E Construction
30 Building Construction
31 Heavy and Civil Engineering Construction
32 Construction Services

F Wholesale Trade

33 Basic Material Wholesaling
34 Machinery and Equipment Wholesaling
35 Motor Vehicle and Motor Vehicle Parts Wholesaling
36 Grocery, Liquor and Tobacco Product Wholesaling
37 Other Goods Wholesaling
38 Commission-Based Wholesaling

G Retail Trade
39 Motor Vehicle and Motor Vehicle Parts Retailing
40 Fuel Retailing
41 Food Retailing
42 Other Store-Based Retailing
43 Non-Store Retailing and Retail Commission-Based Buying and/or Selling

H Accommodation and Food Services
44 Accommodation
45 Food and Beverage Services

Source: ABS cat no.1292.0

I Transport, Postal and Warehousing
46 Road Transport
47 Rail Transport
48 Water Transport
49 Air and Space Transport
50 Other Transport
51 Postal and Courier Pick-up and Delivery Services
52 Transport Support Services
53 Warehousing and Storage Services

J Information Media and Telecommunications
54 Publishing (except Internet and Music Publishing)
55 Motion Picture and Sound Recording Activities
56 Broadcasting (except Internet)
57 Internet Publishing and Broadcasting
58 Telecommunications Services
59 Internet Service Providers, Web Search Portals and Data Processing Services
60 Library and Other Information Services

K Financial and Insurance Services
62 Finance
63 Insurance and Superannuation Funds
64 Auxiliary Finance and Insurance Services

L Rental, Hiring and Real Estate Services
66 Rental and Hiring Services (except Real Estate)
67 Property Operators and Real Estate Services

M Professional, Scientific and Technical Services
69 Professional, Scientific and Technical Services (Except Computer System Design and Related Services
70 Computer System Design and Related Services

N Administrative and Support Services
72 Administrative Services
73 Building Cleaning, Pest Control and Other Support Services

O Public Administration and Safety
75 Public Administration
76 Defence
77 Public Order, Safety and Regulatory Services

P Education and Training
80 Preschool and School Education
81 Tertiary Education
82 Adult, Community and Other Education

Q Health Care and Social Assistance
84 Hospitals
85 Medical and Other Health Care Services
86 Residential Care Services
87 Social Assistance Services

R Arts and Recreation Services
89 Heritage Activities
90 Creative and Performing Arts Activities
91 Sports and Recreation Activities
92 Gambling Activities

S Other Services
94 Repair and Maintenance
95 Personal and Other Services
96 Private Households Employing Staff

APPENDIX III
JOB DESCRIPTIONS AND JOB TITLES

There are very many job descriptions for Green Collar workers. Following is a small selection, culled from online job sites. They are included here as an example of the wide variety of jobs that are available, and the difficulty of determining job responsibilities from job titles. Many of the job descriptions include reporting structures and salaries (in orange at bottom).

Also included after these listing is a list of job titles of members of the Environment Institute of Australia and New Zealand – over 600 separate job titles.

Environmental Manager	**Main job function: To facilitate growth in the organisation and implement a significant environmental approach** **Job tasks include:** ✓ Significant experience working on major engineering and construction projects ✓ **Advising Project Managers (internal and external) in relation to environmental legislation** ✓ Extensive experience in implementing and monitoring Environmental Management Systems ✓ Proven strategic thinking and problem solving skills to assist in deliver of integrated environmental solutions ✓ Tertiary qualifications in Environmental Management or Engineering ✓ **Monitoring legislative and policy compliance** ✓ **Providing training, mentoring and advice to line managers and other senior staff** ✓ Monitoring and reviewing existing systems / policies ✓ **Managing, assessing and mitigating environmental risk** ✓ Project and contract Management **Often divided into five main areas (areas of 'expertise')** ✓ Mining ✓ Oil and Gas ✓ Engineering and construction (Civil Infrastructure) ✓ Marine ✓ Natural Resources **Reports to Group Environmental Manager or Management Board** ($80k-$100k)
Environmental Health Officer	**The Environmental Health Team (public sector) is responsible for:** ✓ Advice on public health and policy initiatives ✓ Inspection of registered premises (such as food premises, hairdressers, etc.) ✓ Investigation of environmental complaints and the resolution of these issues ($30 per hour)

Environmental Engineer (Management Level)	**One of the areas of expertise for Environmental Managers. Similar job functions as a General Environmental Manager, but with expertise in Engineering and/or construction** **Responsible for the development and implementation of Environmental Management Systems** **Job tasks include:** ✓ Waste, including work in tender/proposal preparation ✓ Environmental audits ✓ Design and road infrastructural involvement ✓ Resource recovery strategies ✓ Project Management with a 'green' approach ✓ Provide technical leadership and expertise to the Project Management Team on Project related environmental issues ✓ Monitor site Environmental Plans and provide guidance and direction as needed ✓ Undertake and/or arrange environmental audits at various sites & offices **Reports to Group Environmental Manager or Management Board** ($80k-$120k)
Environmental Assessor	**Likely to be a position in the public sector only. The Assessor will be responsible for:** ✓ Assessing environmental plans ✓ Environmental management plans ✓ Oil spill contingency plans ✓ Risk assessments and other environmental documentation. ✓ Required to conduct environmental audits and inspections of petroleum operations **Reports to the Environmental Manager** ($51,106 - $70,748pa PSGA)
Environmental Officer	**Responsible for preparation and completion of** ✓ Environmental Audits on sites and in offices to verify Environmental System is being implemented ✓ Ensure that all work activities comply with the relevant specifications and standards ✓ Promote Assurance and Environmental best practice to ensure compliance with objectives ✓ Implement Environmental System to achieve completion and sign off of Works Records ✓ Coordinate testing and inspection activities in accordance with the Program Management Plan **Reports to the Environmental Manager**

Environmental Analyst	**Research and Analysis in the Environmental field** **Job tasks include:** ✓ Evaluate, Plan and implement new and innovative solutions ✓ Identify, research and plan Environmental issues ✓ Often a recently graduate from environmental or civil engineering, environmental science, commerce or economics

Environmental Coordinator	**Coordinate an established team of Environmental Officers with responsibilities including:** ✓ Provision of recommendations regarding environmental risk and planning ✓ Implementation and periodic review of EMS to ensure compliance and improvement ✓ Supervision, leadership and mentoring of other environment professionals ✓ Ensuring compliance with environmental policies and government legislation ✓ Environmental reporting and internal auditing ✓ Advise management and other personnel on sound environmental management practices and legislation ✓ Conduct environmental impact assessments for new proposals and prepare relevant documentation for approval by government, ✓ Coordinate, monitor and manage all required licensing conditions and maintain accurate accessible and up to date records ✓ Preparation of land clearing applications ✓ Conduct or commission research into cost-effective and sustainable land rehabilitation practices, or other environmental issues relevant to the site ✓ Managing the compliance database Reports directly to the Environmental Manager

Group Environmental Manager	**In large corporations with environmental managers for different 'areas', the Group Environmental Manger overlooks all Environmental Managers and is in charge of the Corporate Environmental Business strategy across all environmental areas** **Job tasks include:** ✓ Staff Management (including internal communications between sectors within the business) ✓ Project Director /Technical Leadership ✓ Risk Management ✓ Financial Performance ✓ Client Service Management ✓ Strategic Planning and Implementation ✓ Business Development and Marketing ✓ Recruitment and Selection for team development **Reports to the CEO** **($167k)**

Environmental Superintendent (specialist)	**A Dedicated Environmental Professional. Job tasks include:** ✓ Ensuring legislative compliance ✓ Providing advice to senior management in regards to environmental issues ✓ Establishing & maintaining systems ✓ Communicating environmental issues to operational personnel ✓ Leading a team of Environmental professionals ✓ Undertaking environmental risk assessments and audits **Reports to the CEO** ($100k-$150k)
Sustainability Consultant	**An industry specialist selling their expertise and knowledge in the environmental and sustainability field to businesses** **Job tasks include:** ✓ Environmental licensing and approvals works for resource projects ✓ Environmental Impact Assessment ✓ Directing Sub-consultants for Impact Assessment work ✓ Negotiating with regulatory authorities on approvals/licensing matters ✓ Environmental Auditing ✓ Principal Environmental Impact Assessment Consultant (more than 7 years experience in the field) ✓ Mentoring, leading and monitoring individual performance of relevant staff ✓ Liaising with Local and State Government **Reports to the Environmental Manager or CEO** ($70k-$110k)
Sustainability Advisor	**Job tasks include:** ✓ Interface with construction team at the management level, to raise awareness of the environmental sensitivities and related scope of the Project. ✓ Support in providing environmental related procedures to the construction team, focusing on guiding the onshore pipeline construction and horizontal directional drilling. ✓ Help managing input into Project scope regarding environmental management and protection plans and procedures ✓ Developing Environmental Management Plans to help meet both regulatory and business needs. ✓ Assist in influencing contractor's environmental compliance and performance. ✓ Develop environmental management plans/procedures ✓ Provide environmental training/advice on relevant environmental issues ✓ Assist the Project Engineers in the development and delivery with respect to the environmental input into design ✓ Provide input to other functional departments (commercial, procurement, construction, quality, safety) with respect to environmentally sensitive design ✓ Advise/mentor site based supervision to ensure environmental compliance – particularly with regard to dredging/jetty construction etc **Reports to the Environmental Manager or CEO** ($70k-$110k)

Principal Environmental Engineer	**Principal Environmental Engineer (in companies without a Group Enviro Manager. This person is the top Environmental Leader)** **Job tasks include:** ✓ Principal EIA and Planning Engineer to build and lead a team of EIA and Planning specialists especially in water infrastructure arena ✓ Management of the preparation of EA, EIS, REF and SEE ✓ Technical coordination of internal specialists and external sub-consultants ✓ Business development ✓ Manage large scale EIAs for hydrocarbons, infrastructure, and power sectors ✓ Submit proposals under Part 3A, part 4, and part 5 of the Environmental Planning and Assessment Act 1979 ✓ Mentor and support team members ($130,000-$160,000)

Water Recycling Technician	**Responsible for operational tasks** **Job tasks include:** ✓ Operation of - Balance Tank, DAF, Pre Acidification Tank, IC Reactor, MBBR and Secondary DAF, Sand filter, Ultra Filtration Unit, UV Treatment and Reverse Osmosis unit. ✓ Recycle water back to the factory that meets the Company's Quality and Food Safety standards ✓ Support the achievement of Cost, Quality, People, Environment and Service objectives of the site. ✓ Taking samples of the plant at various stages including treated effluent and analyse these samples in a plant laboratory. ✓ Maintaining the plant in a clean, safe and efficient state at all times. ✓ Keeping track and ordering of chemical supplies. ✓ Undertake the first level problem solving and diagnostic for plant faults. ✓ Calibration of critical instruments ✓ Supervise sludge and screenings removal ✓ Identify maintenance needs of equipment and assist maintenance team in completion of relevant maintenance tasks ✓ Prepare regular performance reports of the plant to management ✓ Attend the site when required and at short notice to assist in the operation of the plant. **Reports to the Environmental Manager** ($130,000-$160,000))

EIANZ Member's Job Titles

Assessment Manager
Assessment Officer
Asset Engineer
Asset Manager, Water & Sewerage Section
Assistant Director, Land Use Policy Team
Assistant Director, Natural Heritage East
Assoc Director Sustainability & Climate Change
Associate Director, Team Leader - Environmental Planning
Associate Environmental Consultant
Associate Environmental Engineer
Associate Environmental Planner
Associate Environmental Scientist
Associate Professor of Resource Management Law
Associate Scientist
Associate, Manager Aquatic Ecology
Australian Recycling Manager
Biometrician
Botanist
Botanist/Ecologist
Branch Manager - Petrochemical Services
Business Manager / Environmental Consultancy
Business Processes Manager
Business Systems Coordinator
Catchment Officer
Chemist
Chief Consultant - Climate Change
Chief Environment Assessment Officer
Chief Petroleum Geophysicist
Civil Engineer - Environmental Services
Client Manager / Management Systems Assessor
Commercial Manager, Operations
Community Development Adviser
Company Environment Manager
Compliance Officer
Compliance Superintendent
Consents Manager
Conservation Planning Officer
Considering Post Grad Studies
Consultant
Consultant - Sustainability
Consultant Environmental Scientist
Consultant HSE Advisor
Consultant Technical
Consultant, Sustainability Assurance & Advisory Services
Contamination Manager - Environmental
Corporate Environment Manager
Corporate QSB Manager
Corporate Sustainability Manager
Customer Service Officer
Development & Approval Coordinator
Development Manager
Director - Climate Change & Sustainable Buildings
Director - Ecotourism Research
Director - Environmental & Occupational Health
Director - Parks, Conservation & Lands
Director - Partnerships, Practice & Business
Director - Planning & Environment
Director - Strategic Policy
Director & Engineering Consultant
Director & Manager of Plumbing Installations & Rainwater Tanks
Director & Principal Ecologist
Director / Adjunct Research Fellow
Director / Associate Professor Koori Centre University of Sydney
Director / Consultant Principal
Director / Environmental Consultant
Director / Principal Ecologist
Director / Principal Environmental Scientist
Director Environment & Sustainability
Director Environmental Regulation
Director Environmental Services
Director Heritage & Biodiversity Conservation
Director of Conservation
Director of Corporate Responsibility
Director of Operations & Sustainability
Director of Remediation
Director of Research
Director of the Environmental Management Program
Director Petroleum amd Major Hazard Facilities
Director, Common Use Facility
Director, Environment Health & Safety
Director, Environmental Impact Management
Director, International Wildlife Trade
Director, Land Use Planning
Director, National Environmental Policy Coordination Branch
Director, Resource & Conservation Unit
Director, Working on Country
Director/Consultant
Director/Environmental Scientist
Earth Scientist / Geochemist
Ecological Consultant
Ecologist
Economist
Education & Administration Officer
Emergency Management Advisor, Sector Development
Engineering Planner
Environmental Scientist
Environment & Community Coordinator
Environment & HazMat Officer
Environment & Heritage Specialist
Environment & Planning Manager
Environment & Safety Advisor
Environment & Safety Manager
Environment & Sustainability
Environment & Sustainability Manager
Environment & Sustainability Officer
Environment Advisor
Environment and Planning Graduate
Environment and Safety Officer
Environment Assessment Officer
Environment Business Consultant
Environment Consultant
Environment Manager
Environment Manager - Victoria
Environment Manager (Sunshine Coast)
Environment Officer
Environment Officer – Asset Management
Environment Officer / Environmental Scientist
Environment Officer, Strategy Unit
Environment Program Manager
Environment Protection Superintendent
Environment Quality Manager
Environment Specialist
Environment Superintendent
Environment System Manager
Environment, Community and Land Manager
Environment, Health & Safety Officer
Environment/GIS Consultant
Environmental & OHS Consultant / Auditor
Environmental & Social Scientist
Environmental / Risk Consultant
Environmental Advisor
Environmental Advisor – Production North
Environmental Advisor / Coordinator
Environmental Advisor / Cultural Heritage Contact Officer
Environmental Advisor CSG
Environmental Assistant
Environmental Auditor
Environmental Business Manager
Environmental Compliance Coordinator
Environmental Consultant
Environmental Coordinator
Environmental Coordinator - Strategy & Policy
Environmental Engineer
Environmental Engineer & Toxicologist
Environmental Geologist
Environmental Geoscientist
Environmental Hydrogeologist
Environmental Impact Projects Officer
Environmental Licensing Services
Environmental Manager
Environmental Manager - Building & Infrastructure Groups
Environmental Manager - Operations

Environmental Monitoring Officer
Environmental Monitoring Scientist
Environmental Officer
Environmental Officer - Assessments
Environmental Operations Manager
Environmental Planner
Environmental Policy Officer
Environmental Program Coordinator
Environmental Program Manager
Environmental Project Manager
Environmental Project Officer
Environmental Projects Manager
Environmental Projects Officer
Environmental Representative
Environmental Risk Consultant
Environmental Risk Management Advisor
Environmental Scientist
Environmental Scientist (Ecology)
Environmental Section Manager
Environmental Services Manager
Environmental Services Officer
Environmental Specialist
Environmental Studies
Environmental Superintendent
Environmental Supervisor
Environmental Team Leader
Environmental Town Planner
Environmental Water Branch
Erosion & Sediment Management Officer
Environmental Scientist
Executive Director - Health & Environment
Executive Director / Research Fellow
Executive Environmental Planner
Executive Manager
Executive Marine Environment Manager
Executive Marine Scientist
General Manager - Environmental, Health & Safety Services
General Manager - Operations
General Manager - Water Accounting & Management
General Manager Environment
General Manager Planning & Technical Services
General Manager, Climate Change & Rural Water Sciences
Geoscientist
Geotechnical Consultant
GIS Manager
Group Environment & Health Manager
Group Environmental Coordinator
Group Executive - Environment
Group General Manager Sustainable Development
Group Leader - Conservation & Land Management
Group Manager - Sustainability & Infrastructure Planning
Group Manager Sustainability
Group Manager, Environment & Planning
Group Marketing Manager
Group Process Engineer
Group Safety & Environment Advisor
Gulf Environment & Sustainability Business Leader
Head of Environment
Head of Environment & Sustainability
Head of Sustainable Urbanism
Health, Safety & Environment Advisor
Health, Safety and Environment Manager
Heritage & Biodiversity Conservation Officer
Hydrologist
Implementation Manager
In House Counsel
International Project Manager
Irrigation Water Environmental Consultant
Laboratory Technician
Land Management Coordinator
Land Planning Coordinator
Landfill Operations Manager
Landscape Architect
Landscape Designer/Environmental Consultant
Leader, Environmental Management & Planning
Leader, Living Rivers Stormwater Program
Lecturer, School of Education
Legal Advisor
Legal Officer
Licensed Surveyor
Management Consultant
Management Systems Assessor / Independent Contract Auditor
Management Systems Auditor
Manager - Sustainability Strategy
Manager – Aquatic Ecosystem Health & Aquaculture
Manager - Community Education & Information
Manager - Environment
Manager - Environmental Management
Manager - Environmental Planning & Management
Manager - Environmental Services
Manager - Health, Safety & Environment
Manager - Mining Industry Liaison Unit
Manager - Petroleum Services
Manager - Stormwater
Manager - Sustainable Industries Division
Manager - Transport, Major Infrastructure Assessments
Manager (Environmental Impact Management)
Manager (Planning and Environment)
Manager Business Development & Corporate Governance
Manager Coastal & Natural Resource Management
Manager Corporate Services
Manager Environment
Manager Environment & Business Systems
Manager Environment & Community
Manager Environment & Planning
Manager Environment & Stakeholder Relations
Manager Environment & Sustainability
Manager Environmental & Water Quality Governance
Manager Environmental Services
Manager Environmental Sustainability
Manager Natural Resources
Manager of Review
Manager Planning
Manager Strategic Projects
Manager Strategic Services, Queensland Parks and Wildlife Division
Manager Strategy Development, Planning & Environment
Manager Waterway Health
Manager Workplace Services
Manager, Asset Management Services
Manager, Biodiversity
Manager, Catchment Information & Monitoring
Manager, Environment & Climate change
Manager, Environmental Affairs
Manager, Environmental Division
Manager, Environmental Planning
Manager, Environmental Planning & Assessment
Manager, Environmental Secretariat
Manager, Environmental Services
Manager, Environmental Sustainability
Manager, Health, Safety & Environment
Manager, Laboratory Analysis
Manager, Northern Region
Manager, Planning
Manager, Planning Systems
Manager, Ports and Shipping, Environmental Impact Management
Manager, Projects
Manager, Research & Planning
Manager, Resource Assessment
Manager, River Bank
Manager, Road Network Strategy
Manager, Stormwater
Manager, Sustainability Services
Managing Consultant
Managing Director
Managing Director – Principal Environmental Scientist
Managing Director / Environmental Program Officer
Managing Director / Environmental Scientist
Managing Director and Life Cycle Assessments
Mining Engineer
National Consents & Environmental Programme Manager
National Coordinator Contamination & Waste
National Environment Manager
National Environmental Health & Safety Manager
National Environmental Manager
National Environmental Policy Manager
National Remediation Manager
National Sustainability Manager
National Sustainability Manager, Corporate
Natural Resource Analyst
Natural Resource Management Officer

Natural Resource Scientist
Natural Resources Consultant
Natural Resources Team Leader
Noise Specialist
NSW Environmental Manager
NSW Sustainability Manager
Occupational Hygienist
OHS Manager
OHS&E Consultant & Director
OHSE Consultant
Operations Manager
Operations Manager - Environment
Planner - Environment/Recreation
Planning and Engagement Strategist - Sustainability Programs
Planning Manager
Plant Ecologist
Plant Ecologist / Environmental Consultant
Policy / Project Officer
Policy Advisor
Policy Analyst - Urban Water Policy Branch
Policy Analyst (Natural Resources)
Policy Development Manager
Policy Manager
Policy Officer
Policy Officer, Land
Policy Officer, Water Utilities Branch
Policy Planner
Policy Planner (Coastal Environment)
Principal - Environment
Principal - Environmental Approvals & Compliance
Principal & Office Manager
Principal / Founding Director
Principal / Manager
Principal / Owner
Principal Advisor
Principal Advisor - Energy
Principal Advisor - Waste Management
Principal Advisor, Landscape Management
Principal Conservation Officer, Resource Assessment
Principal Consultant - Climate Change
Principal Consultant - Environment & Governance
Principal Consultant - Environment & Sustainability
Principal Consultant - Sustainability & Climate Change
Principal Consultant (Sustainability)
Principal Consultant, Sustainability & Water Management
Principal Ecologist
Principal EIA Adviser
Principal Environment Adviser
Principal Environment Officer
Principal Environment Scientist
Principal Environmental Consultant
Principal Environmental Engineer
Principal Environmental Geochemist
Principal Environmental Geoscientist
Principal Environmental Officer
Principal Environmental Officer Aquatic Science Branch
Principal Environmental Planner
Principal Environmental Scientist
Principal Hydrogeologist
Principal Landscape Architect
Principal Marine Environmental Scientist
Principal Natural Resources Engineer
Principal Natural Resources Strategist
Principal Planner
Principal Policy Advisor
Principal Policy Economist
Principal Policy Officer
Principal Scientist
Principal Scientist (Modelling)
Principal Scientist / Director
Principal Sustainability Adviser
Principal Urban Planner
Principal Water and Environmental Scientist
Principal Water Resources Scientist
Principal, Environmental Planning
Process Coordinator
Process Engineer
Prof Fellow
Professor of Environmental Law
Professor of Environmental Science
Professor of Environmental Technology
Professor of Natural History
Professor of Resource Economics
Program Engineer
Program Manager
Program Manager - Forestry
Program Manager, Chemical and Environmental Industries
Program Officer
Program Support Coordinator
Project Approvals Manager
Project Consultant
Project Cultural Heritage Officer / Environmental Officer
Project Director
Project Engineer
Project Environmental Manager
Project Environmental Scientist
Project Manager
Project Manager - Consulting
Project Manager - Environment
Project Manager - Environmental Impact Management
Project Manager - Flood Plain Harvesting Policy
Project Manager (Environmental)
Project Manager / General Manager
Project Manager- Environment, Safety and Licensing
Project Manager/Environmental Officer
Project Officer
Project Officer Environmental
Project Officer, Land & Regional Planning
Quality, Environment & Safety Manager
Recruitment Consultant
Refinery Information Specialist
Regional Environment Advisor
Regional Environmental Manager
Regional Environmental Specialist
Regional Landscape and Open Space Planner
Relationship Client Account Manager - Power and Industrial
Research and Teaching Fellow
Research Assessor
Research Associate
Research Engineer
Research Fellow
Research Manager
Research Officer
Research Scientist
Researcher
Residential Programs Manager
Resource Analysis Manager
Resource Management & Regulatory Manager
Resource Management Consultant
Resource Management Officer
Resource Management Planner
Resource Officer
Resource Planner
Risk Management
Risk Officer
River and Catchment Program Manager
Safety & Environment Coordinator
Safety & Risk Consultant
Safety & Training Manager
Safety, Health & Environment Coordinator
Safety, Health & Environment Manager
Science and Evaluation
Science Faculty Schools Liaison Officer
Science Technology Group
Scientific Director
Scientific Officer
Scientist
Section Manager, Contaminated Sites
Senior Advisor - Environment
Senior Archaeologist
Senior Associate
Senior Botanist
Senior Business Planner
Senior Chemical Engineer
Senior Communications Consultant
Senior Conservation Officer
Senior Consultant
Senior Consultant - EIA Coordination
Senior Consultant - Sustainability
Senior Consultant - Sustainability & Climate Change

Senior Contracts Advisor
Senior Director
Senior Ecologist
Senior Ecologist / Manager
Senior EHS Consultant
Senior Engineer
Senior Environment Consultant
Senior Environment, Health and Safety Consultant
Senior Environmental & Planning Officer
Senior Environmental Adviser
Senior Environmental Advisor
Senior Environmental Assessment Officer
Senior Environmental Compliance Officer
Senior Environmental Consultant
Senior Environmental Coordinator
Senior Environmental Engineer
Senior Environmental Geologist
Senior Environmental Health and Building Surveyor
Senior Environmental Hydrogeologist
Senior Environmental Management Advisor
Senior Environmental Management Officer
Senior Environmental Management Specialist
Senior Environmental Officer
Senior Environmental Officer, Southern
Senior Environmental Planner
Senior Environmental Planner
Senior Environmental Planner - Sustainability
Senior Environmental Planner / Director
Senior Environmental Planning Officer
Senior Environmental Policy Officer
Senior Environmental Project Manager
Senior Environmental Scientiest
Senior Environmental Scientis
Senior Environmental Scientist
Senior Environmental Scientist (Environmental Law)
Senior Environmental Scientist (Zoology)
Senior Geologist
Senior Health Safety and Environment Consultant
Senior Hydrogeologist
Senior Hydrologist
Senior Information Technology Officer
Senior Land Aquisition Consultant
Senior Landscape Planner
Senior Lecturer Environmental Management
Senior Marine & Environmental Scientist
Senior Marine Scientist
Senior Maritime Officer
Senior Natural Resource Officer
Senior Natural Resource Planner
Senior Occupational Hygiene Consultant
Senior Partner Environment & Climate Change
Senior Planner (Environment)
Senior Planning Officer
Senior Policy Advisor
Senior Policy Officer
Senior Policy Officer Ecosystem Services
Senior Principal - Environment
Senior Principal Environmental Auditor
Senior Principal Research Scientist
Senior Principal Scientist
Senior Progam Officer
Senior Project Coordinator EIA
Senior Project Engineer - Rehabilitation
Senior Project Manager - Environmental Studies
Senior Project Manager / Environmental Engineer
Senior Project Officer - Contaminated Sites
Senior Project Scientist
Senior Ranger (Ecosystem Management)
Senior Researcher
Senior Resource Management Planner
Senior Resource Planner
Senior Scientist
Senior Scientist - Freshwater
Senior Strategic Planner
Senior Sustainability Advisor
Senior Sustainability Consultant
Senior Sustainability Planner
Senior Technical Manager
Senior Water Resources Engineer
Service Group Manager - Environment
Site Environment Advisor
Site Environmental Advisor
Society Economy & Policy
Soil Scientist
Solicitor (Planning & Environmental Law)
Spatial Analyst
Special Counsel
Special Projects Supervisor
Specialist Consultant
Stakeholder & Environment Manager
State Commissioner (Environment)
State Manager Water & Environment
Strata Consulting
Supervising Environmental Planner
Supervising Scientist
Support Officer – Waterways Management
Support Officer, Natural Areas Management, Environmental Management
Surveyor
Sustainability & Environment Consultant
Sustainability & Reporting Analyst
Sustainability Advisor
Sustainability Consultant
Sustainability Coordinator
Sustainability Facilitator
Sustainability Manager
Sustainability Officer
Sustainability Policy Consultant
Sustainability Projects Leader
Sustainability, EHS Manager
Sustainable Business Analyst
Sustainable Consumption Senior Project Officer
Sustainable Industries Officer
Sustainable Resources Officer
Sustainable Technologist
Systems Auditor
Systems Manager
Team Leader - NRM and Biodiversity Conservation
Team Leader - Strategic Biodiversity Planning
Team Leader - Sustainability
Team Leader - Sustainability Planning
Team Leader - Urban Sustainability Policy
Team Leader Contaminated Land - Environmental Audit Unit
Team Leader Environment
Team Leader Sustainability
Team Leader, Communications & Community Consultation
Team Leader, Environment & Water Resources
Team Manager - Environment
Technical Director
Technical Director - Planning
Technical Director Environment
Technical Lead - Environment
Technical Manager
Technical Services Manager
Technical Teacher
Terrestrial Ecologist
Townsville Office Manager
Trade Commissioner
Urban Planner
Waste Services Manager
Water Chemist / Microbiologist
Water Program Coordinator
Water Quality Officer
Waterway Planner
Wetlands Officer
Wind Resource Analyst

BIBLIOGRAPHY

Job titles and descriptions:

http://www.environmentaljobs.com.au
http://www.greenjobsconference.org/site/c.rvI3IiNWJqE/b.4950285/k.BE91/Home.htm
http://www.environmentjobs.com.au/
http://www.seek.com.au
http://www.sustainablebusiness.com/index.cfm/go/greendreamjobs.about
http://www.carbonjobs.com.au/

Green collar worker definitions:

http://en.wikipedia.org/wiki/Green-collar_worker
http://greencollartech.com/green-collar-worker-definition.htm
http://www.abc.net.au/news/stories/2008/06/26/2286129.htm (turn blue workers into green)
http://www.alternative-energy-news.info/white-blue-green-collar/

Australian Bureau of Statistics:

ANZSCO occupation classification
ANZSIC industry coding
(Both available at http://abs.gov.au

Other referenced or useful publications:

Growing the Green Collar Economy (CSIRO, June 2008)
http://www.csiro.au/resources/GreenCollarReport.html

Green Gold Rush (ACTU and Australian Conservation Foundation)
http://www.acfonline.org.au/uploads/res/Green_Gold_Rush_final.pdf

Green Jobs: Towards decent work in a sustainable, low carbon world, commissioned and funded by UNEP, as part of the joint UNEP, ILO, IOE, ITUC, September 2008
http://www.unep.org/labour_environment/features/greenjobs.asp

Current and Potential Green Jobs in the U.S. Economy, (Global Insight, October 2008)
http://www.usmayors.org/pressreleases/uploads/GreenJobsReport.pdf

REFERENCES

[i] "*Growing the Green Collar Economy*" (CSIRO, June 2008)
http://www.csiro.au/resources/GreenCollarReport.html

[ii] Heffernan, Patrick "*Jobs for the Environment — The Coming Green Collar Revolution*", in *Jobs and Prices in the West Coast Region: Hearing before the Joint Economic Committee, Congress of the United States, 94th Congress, Second Session*, US Government Printing Office, 1976, p. 134

[iii] http://en.wikipedia.org/wiki/Green_collar_worker

[iv] www.virid.us

[v] www.computacenter.com

[vi] www.environminute.com

[vii] *Green Collar Jobs'*, Funded by The City of Berkeley Office of Energy and Sustainable Development, by Raquel Rivera Pinderhughes, 2007

[viii] www.alternative-energy-news.info

[ix] "*Green Jobs: Towards decent work in a sustainable, low carbon world*", commissioned and funded by UNEP, as part of the joint UNEP, ILO, IOE, ITUC, September 2008

[x] Australian Conservation Foundation
http://www.acfonline.org.au

[xi] Green Careers Resource Guide
http://www.cassio.com/

[xii] http://www.abs.gov.au

[xiii] "*Current and Potential Green Jobs in the US Economy*", Global Insight, October 2008, p 5
http://www.usmayors.org/pressreleases/uploads/GreenJobsReport.pdf

[xiv] http://www.abs.gov.au

[xv] Macquarie Dictionary

[xvi] Ibid

[xvii] "*Our Common Future*". Report of the World Commission on Environment and Development, April 1987.