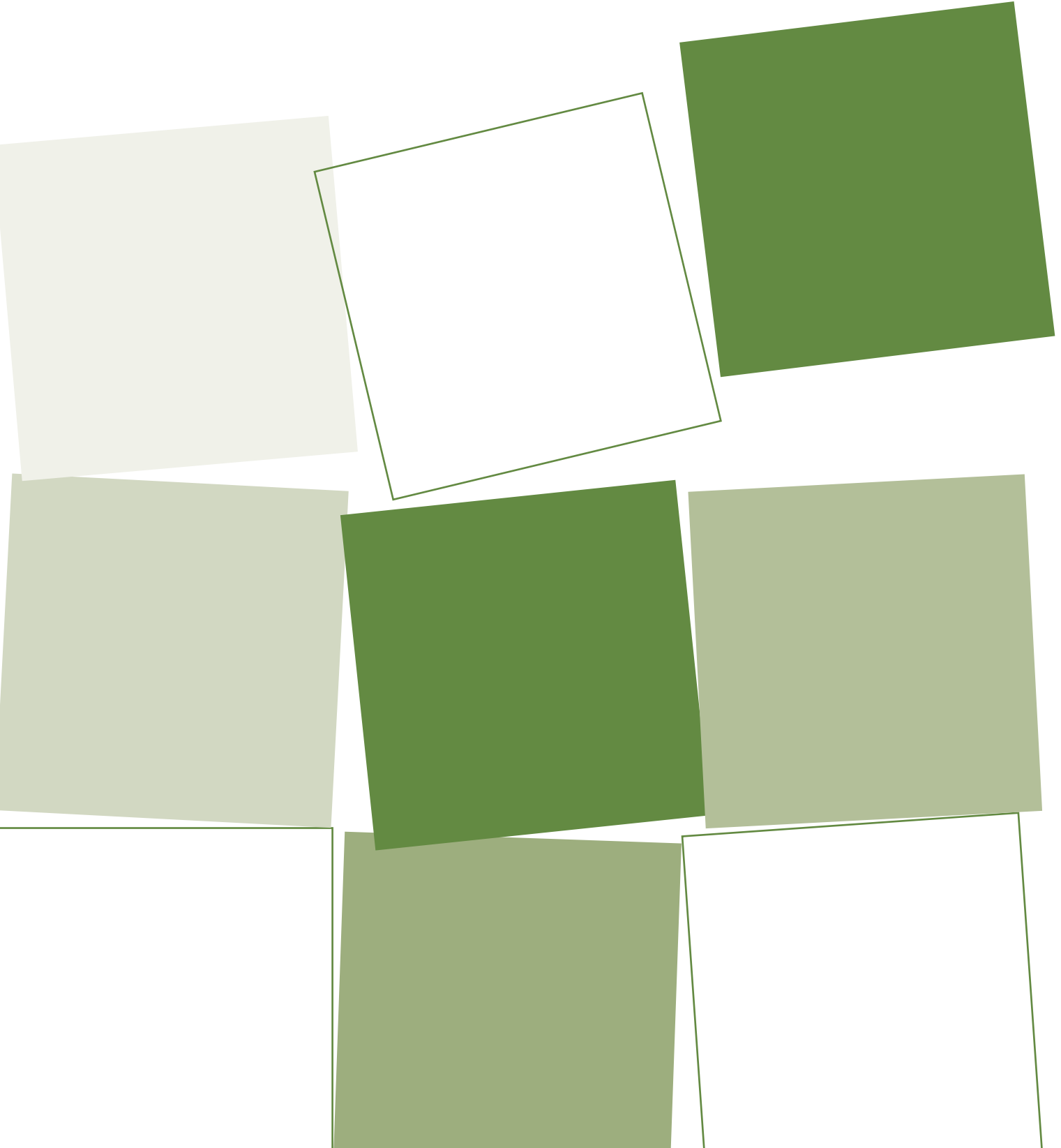




Department of Education and
Early Childhood Development

Skills & Training Needs 2013

Victorian Water and Waste
Services Industry



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Introduction

In the context of Victoria's dynamic economy, a demand-led approach is the best way to ensure a responsive vocational training system that will help as many people as possible build skills that lead to better jobs. This is most evident in the results of the market approach embodied in the Victorian Training Guarantee, which has achieved positive outcomes for both students and the economy.

The Refocusing Vocational Training in Victoria reforms are designed to satisfy important criteria for a strong vocational training market. Through these reforms the Government is ensuring that the vocational training system continues to produce positive outcomes for students, businesses and Victoria.

Through Refocusing Vocational Training, there is a role for Government in monitoring, providing information and responding to the performance of the vocational training system. A key mechanism by which the Government exercises this role is through the Industry Participation Model. The Industry Participation Model is based on a new partnership approach between Government, industry and training providers. It increases industry influence within the training market by supporting more direct relationships between industry and training providers and by increasing direct consultation with Government.

An aim of the Industry Participation Model is to seek to improve information sharing about training provision, options, outcomes, gaps and associated barriers between industry, training providers and employers to improve alignment between industry needs and training delivery. A suite of information products and tools are being developed, of which this report is one, to support this aim and an overview of these is provided overleaf.

This report describes training and economic activity and developments related to Victoria's Water and Waste Services industry, bringing together a range of qualitative and quantitative insights from desk research and industry engagement. It highlights both the challenges the industry faces in attracting the right skills, and the opportunities businesses, training providers and Government have to address these challenges. Key metrics used in this report include enrolments by sub-industry, qualification level, occupation, courses, age group, gender, learners facing barriers, provider type, reason for study and completions. The report also covers apprentices and trainees, and an analysis of the alignment between training delivery and specific industry skills needs. The report produces industry, sub-industry and region-specific findings and, wherever possible, presents comparisons to developments at the State level.

The purpose of this report is:

1. To provide a basis for understanding the Water and Waste Services sector in relation to employment levels, skills shortage occupations, current alignment and responsiveness of the vocational training market to the needs of the sector and to provide an overview of the challenges and opportunities in meeting industry vocational skills needs both now and into the future.
2. To give detailed information around vocational training enrolments by occupation, location, qualification levels and student characteristics, as it relates to the Water and Waste Services sector in order to gauge current trends in vocational training delivery.
3. To summarise the context of the Water and Waste Services sector in relation to the size and scale of the labour and training markets as well as the current policy, economic and social drivers that it is facing.

Suite of Information Products and Tools

<p>Victorian Quarterly Training Market Reports</p> <p>On-going series of quarterly reports aimed at providing a summary of Victorian training market performance following the introduction of the student entitlement system. The report covers three sections – the first provides an overview of the performance of the Victorian training market, the second section examines the participation of learners facing barriers and the third examines the alignment of training to industry skills needs</p> <p>http://www.education.vic.gov.au/training/providers/market/Pages/reports.aspx</p>	<p>Vocational Training: Victoria's Regions</p> <p>Annual publication examining training delivery in each of Victoria's regions in the context of the local population, economy and workforce, building a picture of the relationship between the local training system and regional skills needs, training market performance and responsiveness</p> <p>http://www.education.vic.gov.au/training/providers/market/Pages/regionaltrends.aspx</p>	<p>Vocational Training: Victoria's Industry Report</p> <p>Published annually, this report combines industry intelligence and economic analysis with training data to build a picture of the relationship between industry skills needs, employment opportunities and skills training. Each industry training profile provides economic context and a summary of training challenges and highlights from Industry Participation Model initiatives</p> <p>http://www.education.vic.gov.au/training/employers/industry/Pages/marketinfo.aspx</p>
<p>Industry Sub-sector Summary Reports and Industry Factsheets</p> <p>46 sub-sector summary reports which highlight labour and training market dynamics with an overview of current and forecast employment needs and vocational training patterns across the sectors and at the regional level</p> <p>A series of factsheets are also available for 19 industries</p> <p>http://www.education.vic.gov.au/training/employers/industry/Pages/marketinfo.aspx</p>	<p>Business Toolkit and Case Studies</p> <p>Toolkit for employers providing information on how to get government subsidised training under the Victorian Training Guarantee; getting the best training for your business, with a helpful checklist; information of Recognition of Prior Learning; and a range of interesting employer and training provider case studies</p> <p>http://www.education.vic.gov.au/training/employers/workforce/Pages/marketfacilitation.aspx</p>	<p>Portfolio Industry Reports</p> <p>These reports describe training and economic activity and developments related to key Victoria's industry sectors. Highlighted are both the challenges the industry faces in attracting the right skills, and the opportunities businesses, training providers and government have to address these challenges. A range of key workforce and training metrics are also provided. There are two tiers of reports; detailed reports representing the focus industries for the Department in 2013, and summary reports covering other industry sectors</p> <p>http://www.education.vic.gov.au/training/employers/industry/Pages/marketinfo.aspx</p>
<p>Industry Blog</p> <p>A forum for people interested in industry skills and training issues in Victoria, the blog features a range of topics relevant to stakeholders, information on recent industry events, groups and forums and new initiatives focused on enhancing market performance through facilitation activities</p> <p>http://skillsblogvic.wordpress.com/</p>	<p>Industry Skills Update - e-Alerts</p> <p>Regular email update featuring the latest news about Industry Participation Model activities; market facilitation and related government initiatives; reports; and training performance information</p> <p>To subscribe contact: Department of Education and Early Childhood Development, skills.online@edumail.vic.gov.au</p>	<p>Web Pages – Industry Training Market Information</p> <p>19 webpages with information about the skills and training market for Victorian industries. For each industry, there's a training snapshot, information about skills in demand, training market intelligence reports along with more detailed reporting for each industry sub-sector. Information is updated regularly</p> <p>http://www.education.vic.gov.au/training/employers/industry/Pages/marketinfo.aspx</p>
<p>Rate Your Training</p> <p>Ratings tool for industry and employers which is a simple-to-use system where employers can rate the performance of a training provider in a particular study area against selected criteria, and review and compare the ratings of other employers</p> <p>http://rateyourtraining.com.au/</p>	<p>E-Marketplace (in development)</p> <p>Website which facilitates connections between employers and training providers. Employers can anonymously post their training requirements and training providers are able to provide structured response online. Employers are then able to review the response with no obligation, create a shortlist and follow up directly with their preferred providers</p>	<p>Victorian Skills Gateway</p> <p>One-stop-shop of Victorian vocational education and training to help find the best option for students. Searches can be performed on occupations, courses, training providers, video and written case studies. This website is also viewable via a purpose-built smartphone interface</p> <p>http://www.education.vic.gov.au/victorianskillsgateway/Pages/home.aspx</p>

Industry and data scope

This section summarises the scope of the Water and Waste Services industry¹ as well as key data sources.

Products and services

The Water and Waste Services industry includes businesses engaged in water, drainage and sewage services, as well as businesses involved in waste collection, treatment and disposal services.

Water supply includes the storage, treatment and distribution of water; drainage services include the operation of drainage systems; and sewage services include the collection, treatment and disposal of waste through sewer systems and sewage treatment facilities.

Waste services covers businesses engaged in the collection, treatment and disposal of waste materials, remediation of contaminated materials (including land), and materials recovery activities.

Data

The main source of data on vocational training activities is the training activity database referred to as SV Training System (SVTS).

The report presents findings for the time period from 2008 to 2013, with an in depth analysis of developments and patterns in the 2013 calendar year. Data was extracted from SVTS as at March 2014 and subject to revision.

This report includes government subsidised vocational training enrolments only. Data on completions contain all government subsidised and fee for service enrolments at any course level by all providers.

Training data shown in the tables are rounded to the nearest 100 when the figures are greater than 1,000; to the nearest 50 when they are between 100 and 1,000; and to the nearest 10 when they are less than 100. Any percentages are calculated based on the original, unrounded data.

Figure 1.1: Water and Waste Services industry ANZSIC breakdown

ANZSIC code	ANZSIC industry
28	Water Supply, Sewerage and Drainage Services
	281 Water Supply, Sewerage and Drainage Services
	2811 Water Supply
	2812 Sewerage and Drainage Services
29	Waste Collection, Treatment and Disposal Services
	291 Waste Collection Services
	2911 Solid Waste Collection Services
	2919 Other Waste Collection Services
	292 Waste Treatment, Disposal and Remediation Services
	2921 Waste Treatment and Disposal Services
	2922 Waste Remediation and Materials Recovery Services

¹ As defined by the Australian Bureau of Statistics, Australian and New Zealand Standard Industrial Classification (ANZSIC), 2006.

Water and Waste Services trends and issues

This section focuses on the Water and Waste Services industry as a whole. It covers: key issues and challenges including economic conditions, new regulations, demographic changes, changing social attitudes, new technology/processes, changing consumer tastes, environmental sustainability and the direction of industry restructuring.

Key messages, issues and challenges

- The Water and Waste Services industry is greatly influenced by environmental considerations: the Water sub-sector by climatic issues and managing variable water supply; the Waste Services sub-sector by the drive towards recycling and reducing the amount of waste going to landfill.
- Work practices within the industry are changing, driven in part by technological developments aimed at maximising waste water use or capturing energy from waste treatment and processing. These developments are changing work practices within the industry and have implications for the skills needs of the future workforce.
- The industry has an ageing workforce profile, which means that succession planning, workforce development and employee attraction will be the focus areas for businesses; managing the workforce and its changing skill requirements will be crucial to effective service delivery going forwards.
- Across Victoria, the Water and Waste Services industry is estimated to be worth around \$2.2 billion to the State economy, with a workforce of approximately 17,300 workers. This represents 0.6 per cent of Victorian employment.
- Future growth in output is expected to be slightly below the average for all Victorian industries, and is currently forecast at 13 per cent over the five years to 2017-18 (compared to an 'all industry' average of 14 per cent over the same period).
- At the end of June 2012, it was estimated that there were 1,300 businesses in the sector operating in Victoria. Almost 84 per cent of Water and Waste business establishments were either in Waste Collection Services or Waste Treatment, Disposal and Remediation Services.
- With regards to turnover, Victoria's Water and Waste businesses are less likely to be in the low turnover ranges (zero to less than \$50,000), and more likely than average to have a large annual turnover of \$200,000 or more.

Industry trends and outlook

The following tables outline the trends and drivers for the main areas of activity within the Water and Waste Services sector.

Water Supply, Sewerage and Drainage Services

- The Water sub-sector's core work is greatly affected by climatic issues - managing desalination plants, dams and rivers during drought, and using emerging technology to maximise waste water use. This is changing work practices and technology use, which requires a prompt response in vocational training content.² Managing its workforce and the changing skill requirements is crucial to effective service provision to all Australians.
- The Water sub-sector experiences a high media profile, with many vested interests in the appropriate management of water including farmers and irrigators, desalination plants and the general public.
- Key trends and factors that are likely to impact on the Water sub-sector over the next five years include:
 - Projected exits (retirements)
 - Labour shortages
 - Impact of new technologies
 - Climate change
 - Legislation and regulation³
- New certification requirements are having an impact on industry skills and training needs. In Victoria, the Department of Health and the Victorian Water Industry Association have developed a *Victorian Framework for Water Treatment Operator Competencies* to provide a minimum competency framework for those directly involved in water treatment activities.⁴ In addition, a *National Certification Framework for Operators of Potable Water Treatment Plants*, aiming to implement nationally agreed minimum skills and training standards for operators of potable water treatment facilities, is being piloted in New South Wales and Queensland.⁵ Any future implementation of this initiative is expected to have a major impact on industry training requirements.⁶

² Government Skills Australia, 2012 *Environmental Scan*

³ Government Skills Australia, 2012 *Environmental Scan*

⁴ Department of Health and the Victorian Water Industry Association, *Victorian Framework for Water Treatment Operator Competencies: Best Practice Guidelines*

⁵ Australian Water Association, http://awa.asn.au/National_Certification_Framework/

⁶ Government Skills Australia, 2013 *Environmental Scan*

- The contest for trained staff is highly competitive between water organisations and also with the resources sector.⁷ An increase in supply of suitably trained workers would therefore appear to be in the interest of students, trainers and employers.

Waste Collection, Treatment and Disposal Services

- Australians are the seventh-highest producers of municipal waste in the world. In 2013-14, the volume of municipal solid waste, commercial, industrial, construction and demolition waste generated nationally is estimated to total 48 million tonnes. Of this, approximately 41 million tonnes is treated and disposed of by the industry, with the balance accounted for by waste recycling and remediation companies.⁸
- The industry has grown rapidly in recent years, driven in part by population growth, and outsourcing of services by local authorities. Future growth will increasingly be driven by recycling, alternative disposal methods and energy generation given that waste and disposal services are moving away from traditional landfills.
- This trend is being driven in part by government policies aimed at reducing waste sent to landfill. These policies include increases in landfill levies, provision of paper and organic municipal recycling collection services and more stringent regulations governing waste disposal methods.⁹
- *Getting Full Value: the Victorian Waste and Resource Recovery Policy* sets a 30 year vision for waste and resource recovery in Victoria with policy priorities that will guide actions over the next ten years. Launched in April 2013, the policy aims to reduce Victoria's waste generation and make the best use of materials that are currently going to landfill. The policy also ensures that priority is given to public health and the environment.¹⁰
- There is an increasing trend towards the capture of energy from waste treatment and processing, occurring in large landfill sites and at recovery and alternative waste technology plants. The trend for producing energy from waste is expected to continue and is likely to have implications for the skills needs of the future workforce.¹¹
- Industry consolidation is also increasing, as local authorities are looking for greater economies of scale and increasingly innovative solutions from their outsourced service providers. This tends to favour larger companies that invest more in research and development, and technology.¹²

7 Government Skills Australia, *2012 Environmental Scan*

8 IBISWorld, *Waste Treatment and Disposal Services in Australia, Feb-2014*

9 IBISWorld, *Waste Remediation and Materials Recovery Services in Australia, Feb-2014*

10 State of Victoria, *Getting Full Value: The Victorian Waste and Resource Recovery Policy, Apr-2013*

11 IBISWorld, *Waste Remediation and Materials Recovery Services in Australia, Feb-2014*

12 IBISWorld, *Waste Treatment and Disposal Services in Australia, Feb-2014*

- As with the Water sub-sector, Waste Services has an ageing workforce profile. As a result, succession planning, skills development and attracting new entrants are likely to be priorities for the industry in the years ahead.

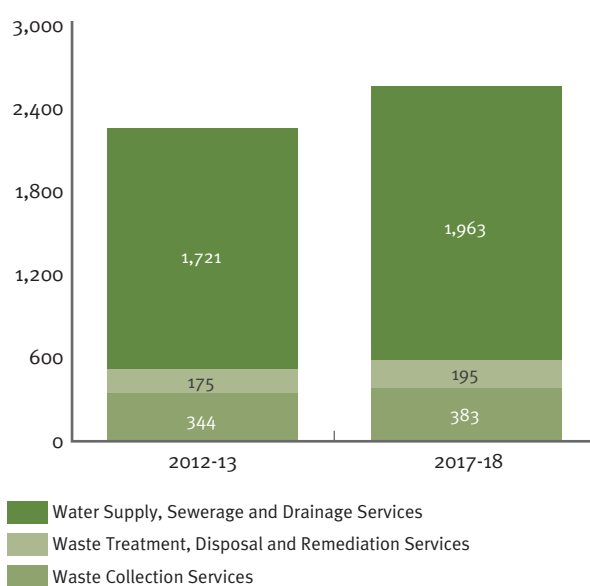
Economic contribution

Victoria's Waste and Water Services industry contributed approximately \$2.2 billion to the state economy in 2012-13, around 0.8 per cent of total output. The industry directly employs approximately 17,300 workers, representing 0.6 per cent of Victorian employment.

Looking forward, output growth of 13 per cent is anticipated in the five years to 2017-18, to around \$2.5 billion. This is slightly lower than the anticipated state growth rate of 14 per cent across all Victorian industries. Water Supply, Sewerage and Drainage Services accounted for the highest proportion of industry output, 77 per cent of the total industry output.

A highly skilled workforce leads to increased productivity and economic growth. High quality education and skills training is essential for Victorians to access the opportunities of a growing and changing economy, and an increasingly sophisticated and information-rich society.

Figure 2.1: Water and Waste Services output (\$ million), Victoria, 2012-13 and 2017-18



Source: Monash Centre of Policy Studies (CoPS) Employment Forecasts, June 2013

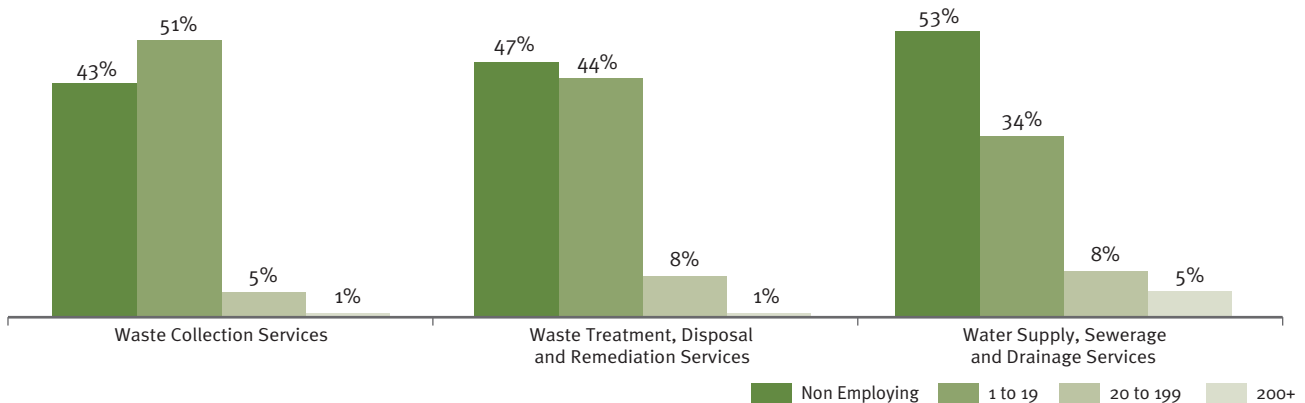
Employer profile

At the end of June 2012, it was estimated that there were 1,300 businesses in the Victorian Water and Waste Services industry.

Almost 84 per cent of Water and Waste business establishments were either in Waste Collection Services or Waste Treatment, Disposal and Remediation Services.

The distribution of Waste and Water businesses by employment level is skewed towards micro (non-employing) and small sized employing businesses (between one and 19 employees). Forty-seven per cent of all Waste and Water Services businesses were non-employing businesses which is comparatively lower than the all-industry average of 61 per cent. Small businesses (employing one to 19 employees) comprised a slightly larger proportion of Waste and Water businesses when compared with the all-industry average (46 per cent compared with 35 per cent).

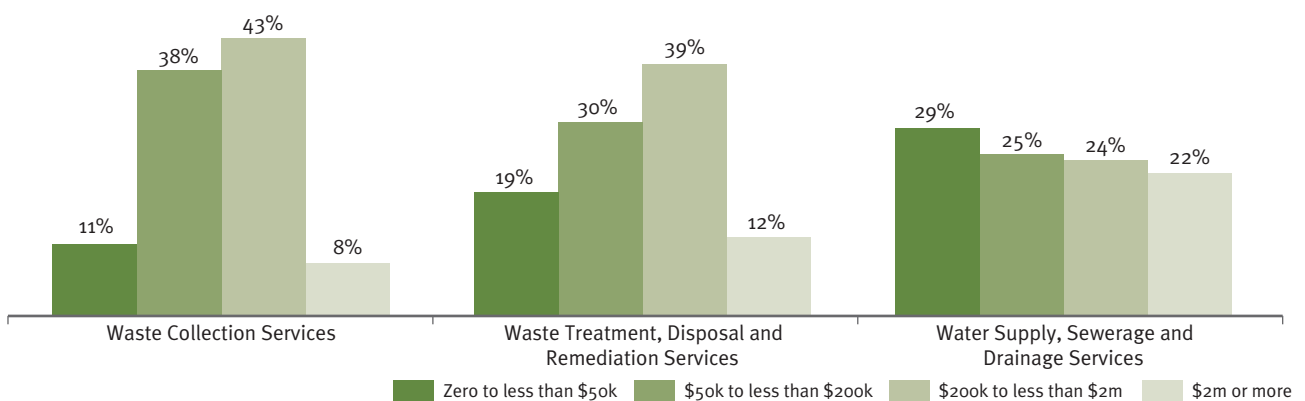
Figure 2.2: Share of businesses by employment, Victoria, 2012



Source: Australian Bureau of Statistics (ABS), Count of Australian Businesses, including entries and exits, 2012

With regards to turnover, Victoria's Water and Waste businesses were less likely to be in the low turnover ranges (zero to less than \$50,000), and more likely than average to have a large annual turnover of \$200,000 or more.

Figure 2.3: Share of businesses by turnover size, Victoria, 2012



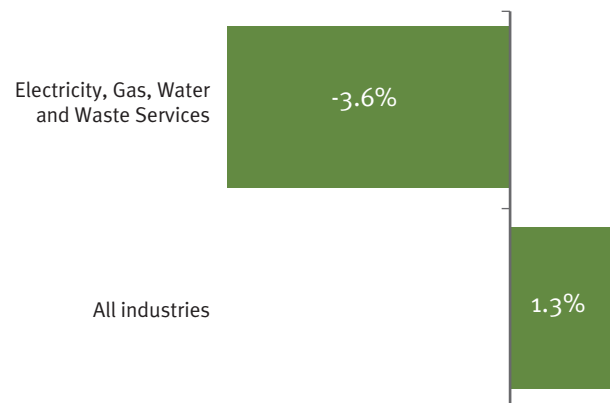
Source: Australian Bureau of Statistics (ABS), Count of Australian Businesses, including entries and exits, 2012

Labour productivity

Labour productivity is defined as real gross value added per hour worked. Figure 2.4 shows the average annual compound rate of growth in labour productivity for the Electricity, Gas, Water and Waste Services industry over the period 2003 to 2013. Nationally the average compound annual growth rate of labour productivity for Electricity, Gas, Water and Waste Services was -3.6 per cent, while the all-industry average was 1.3 per cent.

Upskilling the workforce continues to be an important focus for increasing productivity, and producing more with less. A well-trained, job-ready workforce is the life-blood of Victoria's industry and business and the largest determinant of productivity in the State's economy.

Figure 2.4: Labour productivity measure by gross value added (GVA) per hour worked, average annual growth, Australia, 2003 to 2013



Source: Australian Bureau of Statistics (ABS), Australian System of National Accounts, 5204.0

Water and Waste Services workforce and skills

This section focuses on the Water and Waste Services industry workforce. It covers employment levels and trends, as well as workforce characteristics such as age and skill level.

Key messages, issues and challenges

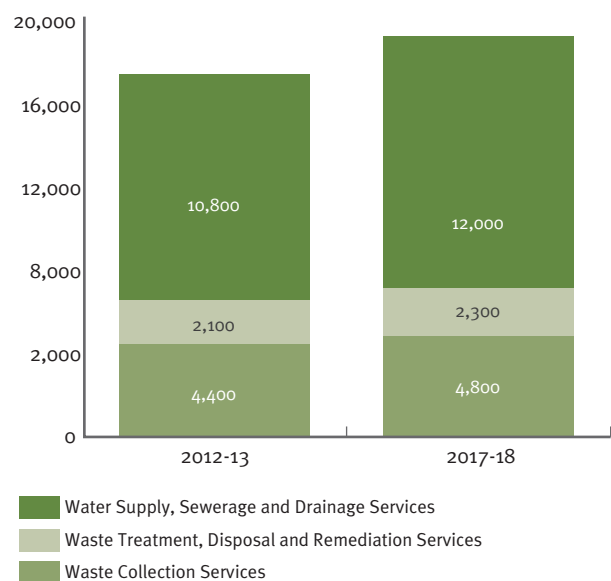
- Approximately 17,300 people were employed in Victoria's Water and Waste Services industry in 2012-13. Employment has been growing in recent years, and this trend is forecast to continue. The industry has seen employment grow by 45 per cent over the last five years; employment is expected to grow by 10 per cent over the five years to 2017-18.
- The industry's workforce is skewed towards the middle- to older-age groups, with 67 per cent employed within the age groups of 35 years and above.
- The Water and Waste industry employs a lower proportion of women (30 per cent) than men (70 per cent).
- A high proportion of the Water and Waste Services workforce (42 per cent) has no post school qualifications, slightly higher than the all industry average of 40 per cent.
- Four occupations in the Water and Waste Services industry – Plumbers, Fitters, Metal machinists and Truck Drivers – are considered to be experiencing skills shortages in Victoria.
- As highlighted above, the industry has an ageing workforce profile, and attraction of new recruits is a business priority. Common drivers of recruitment difficulties include a lack of suitably skilled workers and competition from other industries. *The H2Oz – Careers in Water* website aims to generate awareness of potential as one response to the industry's workforce attraction issues.
- Customer expectations of service providers in the Water and Waste industry are increasing, leading to a greater focus on customer service skills. This is occurring alongside a drive for increased workforce efficiency, with leadership skills flagged as a development need. At the operational level, Language, Literacy and Numeracy skills have also been flagged as a potential development area.
- Technology is also a major driver of skills development needs across the industry, which is being affected by increasing automation. Ongoing training and education will be a key component in assisting staff to adapt to a changing work environment.

Employment

Approximately 17,300 people are employed in Victoria's Water and Waste Services industry. The industry has seen employment grow by 45 per cent over the last five years, equating to approximately 5,500 employees. The outlook over the next five years is for employment to expand, albeit at a smaller growth magnitude of 10 per cent.

The Water Supply, Sewerage and Drainage Services is the largest sub-sector in terms of employment, accounting for 62 per cent of jobs in the industry.

Figure 3.1: Water and Waste employment, Victoria, 2012-13 and 2017-18



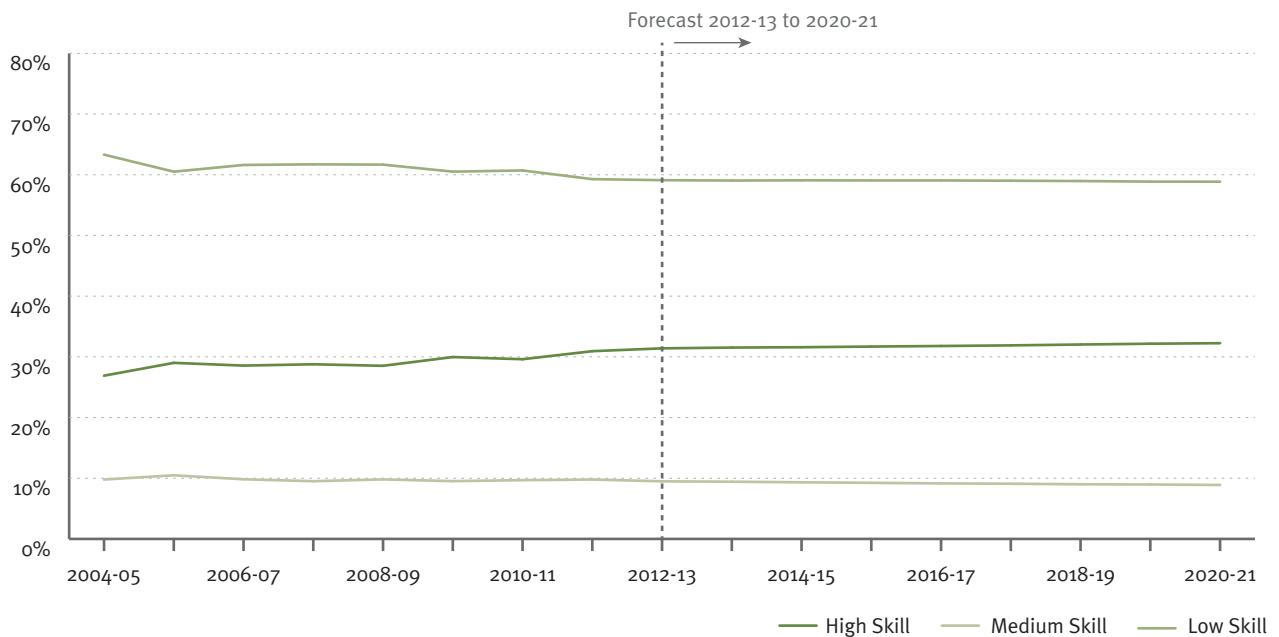
Source: Monash Centre of Policy Studies Employment Forecasts, June 2013

Skills composition

Compared to the majority of sectors, the pattern in Water and Waste Services industry is different in that there are a greater proportion of lower skilled roles than higher skilled roles.

The Water and Waste Services industry's skill levels show a growing proportion of higher skilled roles into the future. Higher skilled roles as a percentage of the overall workforce are projected to increase to 32 per cent in 2020-21, from a base of 27 per cent in 2004-05. Lower skilled roles are still expected to account for the highest proportion of industry employment into the future, 59 per cent of employment in 2020-21 (compared with 63 per cent in 2004-05). The proportion of medium skilled roles in the industry is expected fall slightly, from 10 per cent to nine per cent over the same period.

Figure 3.2: Water and Waste industry skill levels, Victoria, 2004-05 to 2020-21



Source: Monash Centre of Policy Studies Employment Forecasts, June 2013

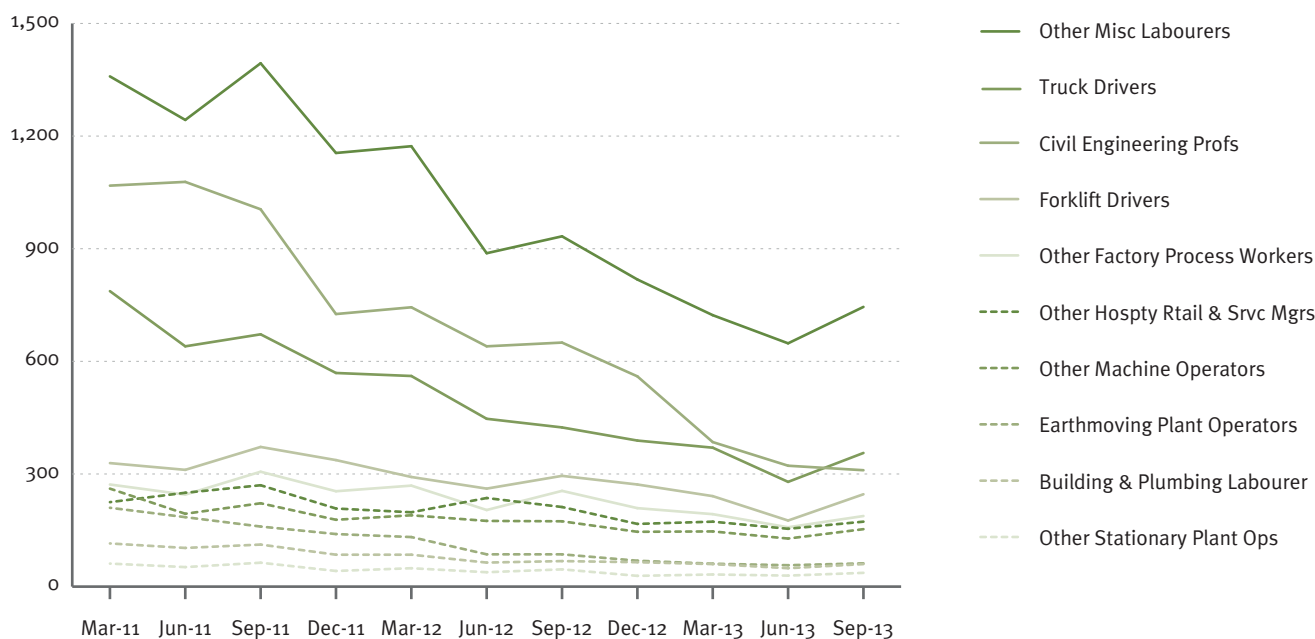
Note: High skill—managers and professionals. Medium skill—technicians and trades workers, community and personal service workers. Low skill—clerical and administrative workers, sales workers, machinery operators, drivers and labourers

Job vacancies

Figure 3.3 below highlights the number of vacancies posted online in Victoria over the last two years for selected key Water and Waste Services occupations. The number of online job advertisements across Water and Waste Services occupations has fluctuated over the period and generally tracks the decreasing trend seen in the national Internet Vacancy Index.¹³

There were approximately 2,400 newly lodged vacancies in key Water and Waste Services occupational groupings in September 2013. Other Miscellaneous Labourers, Truck Drivers, and Civil Engineering Professionals were the largest occupations in terms of vacancies, followed by Forklift Drivers and Other Factory Process Workers.

Figure 3.3: Number of newly lodged online vacancies in key Water and Waste occupations, Victoria, 2011 to 2013



Source: Department of Education, Employment and Workplace Relations (DEEWR) Internet Vacancy Index (based on a count of online vacancies newly lodged on SEEK, My Career, CareerOne and Australian JobSearch), major advertising occupations only. Note: caution advised when using monthly occupation data as it is susceptible to fluctuation from month to month.

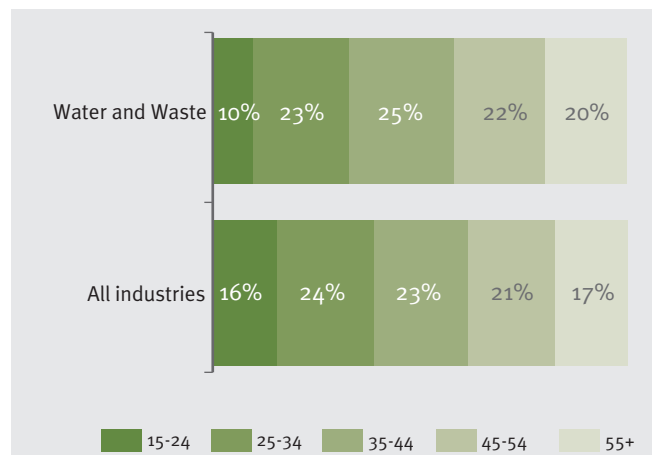
¹³ Department of Education, Employment and Workplace Relations, DEEWR Vacancy Report, February 2013

Labour market characteristics

Employment by age

A high proportion of the Water and Waste Services industry workforce is within the middle to older age cohorts of 35 years and older – representing 67 per cent of total industry employment compared to an average across all Victorian industries of 61 per cent. Consequently, the proportion of the workforce falling within all other age cohorts is lower than the average across all industries.

Figure 3.4: Proportion of employment by age, Victoria, 2012-13

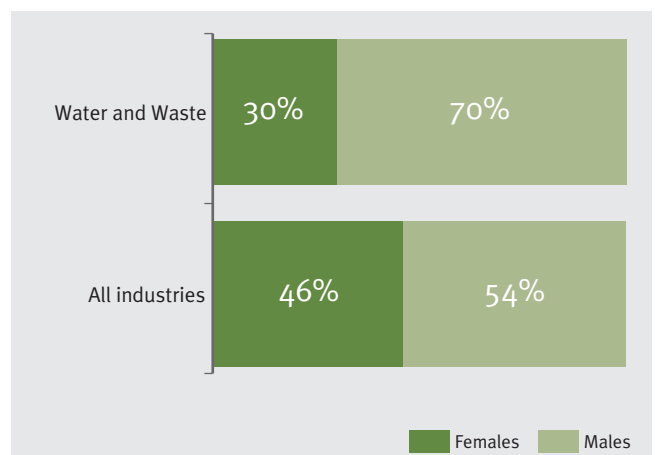


Source: Monash Centre of Policy Studies Employment Forecasts, June 2013

Employment by gender

The Water and Waste Services industry employs a higher proportion of men (70 per cent) than women (30 per cent). The all-industry average is 54 per cent male compared with 46 per cent female.

Figure 3.5: Proportion of employment by gender, Victoria, 2012-13

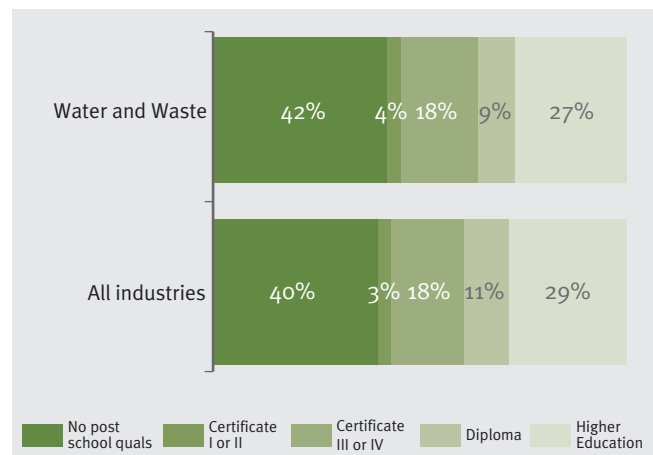


Source: Monash Centre of Policy Studies Employment Forecasts, June 2013

Employment by qualification level

The make-up of the workforce by qualification level in the Water and Waste Services industry is largely similar to that of the ‘all industries’ average, with a slightly larger share of workforce with no post school qualifications (42 per cent), but a smaller proportion workforce with Diploma and above qualified workers than the ‘all industries’ average.

Figure 3.6: Proportion of employment by qualification level, Victoria, 2012-13

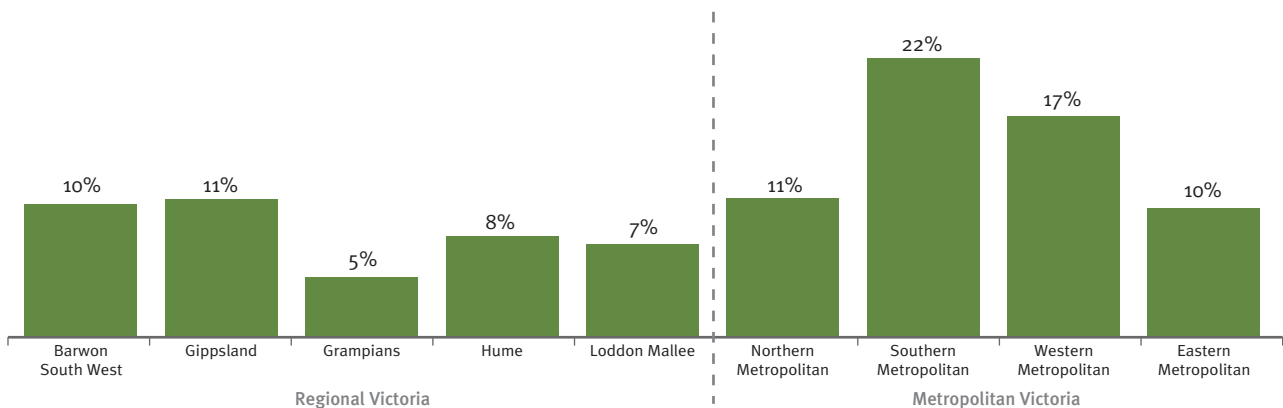


Source: Monash Centre of Policy Studies Employment Forecasts, June 2013

Employment by region

In 2011 the bulk of employment in the Water and Waste Services industry was located in Metropolitan Victoria, with the highest proportion of employment (22 per cent) in the Southern Metropolitan area.

Figure 3.7: Share of Water and Waste Services employment in metropolitan and regional Victoria, 2011



Source: Department of State Development, Business and Innovation (2013) LGA Employment Forecasts

Occupations in demand

Table 3.1 highlights the occupations at four-digit ANZSCO level (Australian and New Zealand Standard Classification of Occupations) that align to the Water and Waste Services industry. Note that while some occupations also align to other industries, the figures shown are specific to the Water and Waste Services industry.

Forecasts presented in the table estimate the employment growth and replacement demand in terms of the average number of jobs required for each occupation annually up to 2017-18.

Employment growth is the net number of new jobs that the occupation is currently forecasting within the industry. Replacement demand is the number of existing workers that are forecast to leave each occupation through retirement, moving on etc. that require replacing to meet existing employment needs.

Across all occupations in the Water and Waste Services industry projected average annual employment needs between 2012-13 and 2017-18 are for around 650 workers per year to satisfy employment growth and replacement demand.

Table 3.1: Estimated annual employment growth and replacement demand for the top 20 occupations in the Water and Waste Services sector, Victoria

Occupation	2012-13 employment total	Average annual employment needs	Overall employment growth to 2017-18
Truck Drivers	2,170	100	240
Other Stationary Plant Operators	1,540	160	340
Civil Engineering Professionals	840	80	90
Building and Plumbing Labourers	620	30	-20
Inquiry Clerks	490	20	40
Accounting Clerks	440	20	50
Contract, Program and Project Administrators	410	20	80
General Clerks	390	20	30
Other Specialist Managers	350	20	60
Environmental Scientists	280	30	40
Accountants	230	10	30
Plumbers	220	10	10
Other Machine Operators	220	20	40
Earthmoving Plant Operators	210	0	-20
Metal Fitters and Machinists	200	20	20
Other Sales Assistants and Salespersons	170	10	20
Other Miscellaneous Labourers	170	10	20
Science Technicians	170	10	0
Other Factory Process Workers	160	0	-10
Forklift Drivers	150	10	20
Other	990	50	80

* VET occupations highlighted in green

Key messages at the occupational level are that there is currently forecast to be substantial employment growth and replacement demand to 2017-18 in:

- **Truck Drivers:** average annual employment needs of 100, and an estimated overall employment growth of around 240 workers between 2012-13 and 2017-18.
- **Other Stationary Plant Operators:** average annual employment needs of 160, and an estimated overall employment growth of around 340 workers between 2012-13 and 2017-18.
- **Civil Engineering Professionals:** average annual employment needs of 80, and an estimated overall employment growth of around 90 workers between 2012-13 and 2017-18.

There are also some occupations where overall employment is expected to decline:

- **Building and Plumbing Labourers:** average annual employment needs of 30, and an estimated overall employment decline of around 20 workers between 2012-13 and 2017-18.
- **Earthmoving Plant Operators:** an estimated overall employment decline of around 20 workers between 2012-13 and 2017-18.

Specialised and in-shortage occupations

This section focuses on current skills shortages in specific occupations related to the Water and Waste Services industry as well as those occupations that are specialised.¹⁴

The Department's analysis of skill shortages considers both quantitative evidence and intelligence gathered through industry consultation and related sources.¹⁵

Highlighted below are the occupations within the Water and Waste Services industry that are deemed to be specialised and/or in-shortage. Table 3.2 then provides a summary of key Water and Waste Services occupations by specialised and in-shortage status.

¹⁴ DEECD uses the Australian Workforce and Productivity Agency Specialised Occupations List 2013. These occupations have a long lead-time for training, high economic value and a significant match between training and employment.

¹⁵ Department of Employment, Labour Market Research and Analysis Branch (2013) Skill Shortage Occupations – various occupations

Plumbers are identified as being a shortage occupation in Victoria and are also a specialised occupation. Plumbers install and repair water, drainage, gas and sewerage pipes and systems. Skill Shortages associated with Plumbers in Victoria are driven by high trend levels in employment growth and replacement demand, training and graduate absorption.

Plumbers	Skills Shortage	✓	Specialised Occupation	✓
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Fitter are identified as being a shortage occupation in Victoria and are also a specialised occupation. Fitters fit and assemble metal parts and subassemblies to fabricate production machines and other equipment. Skill Shortages associated with Fitters in Victoria are driven by high growth trends in employment and expanding average working hours. Labour market research has shown that specialist skills and experience in demand by employers includes hydraulics, pneumatics, welding and CNC-machining as well as exposure to industry sector specific working environments. English language skills were also a barrier for the successful recruitment of some candidates. Overall a lack of experience and limited skill ranges were the most common reason applicants were found unsuitable within this occupation.

Fitter	Skills Shortage	✓	Specialised Occupation	✓
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Metal Machinists are identified as being a shortage occupation in Victoria and are also a specialised occupation. Metal Machinists set up and operate machine tools to shape and form metal stock and castings to fine tolerances, using detailed drawings and specifications. Shortages associated with Metal Machinists in Victoria are driven by high growth trends in employment and expanding average working hours. Labour market research has shown that although most positions required a qualification, employers noted the most important factor was high level experience of at least two years when recruiting for specialist positions within the industry.

Metal Machinists	Skills Shortage	✓	Specialised Occupation	✓
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Truck Drivers are identified as being a shortage occupation in Victoria. Truck drivers drive heavy trucks, removal vans, tankers and tow trucks to transport bulky goods and liquids. Shortages associated with Metal Machinists in Victoria are driven by pressure from employment and replacement demand and higher average weekly hours. This is also reflected in higher than average enrolments, completions and graduate absorption. DEECD consultation with industry however, indicates that not all truck drivers are in shortage - rather it is those with specialist skills and experience (e.g. HC drivers, b-double drivers, dangerous goods licence).

Truck Drivers	Skills Shortage	✓	Specialised Occupation	✗
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Table 3.2: Occupations ‘in-shortage’ or ‘specialised’

Occupation	In-shortage	Specialised
Plumbers	Yes	Yes
Fitters	Yes	Yes
Metal Machinists	Yes	Yes
Truck Drivers	Yes	No

Workforce skills needs

- As highlighted earlier in this report, the Water and Waste Services industry has an ageing workforce; succession planning and attracting new recruits are both a priority and a challenge for the industry. Research in the Water sub-sector has indicated that the most common drivers of recruitment difficulties include:
 - Salary competition
 - A lack of suitably skilled workers
 - Location
 - The lure of the resources sector¹⁶
- The Australia Water Association has launched the *H2Oz – Careers in Water* website to generate awareness and provide information on careers in the Water industry as one way of responding to the industry’s workforce attraction issues: <http://www.h2oz.org.au/>
- Customer expectations of service providers are increasing, alongside a greater focus on customer service in the industry. Demands on services are expected to continue to grow, in line with population growth, driving a need for greater workforce efficiency. These developments mean that the industry will need to become more professional. With up-skilling of the workforce in train via the introduction of the *Victorian Framework for Water Treatment Operator Competencies* highlighted above, leadership skills development has also been identified as a training priority for the industry.¹⁷

- Technology is being highlighted as a driver of skills development needs across the industry, with both water and waste management being impacted by increased automation and the introduction of more complex technologies. In addition, consumers are demanding more information about their water use, which will require skills in areas like brokerage, auditing and management. Ongoing training and education is a key component in assisting staff to adapt to new technologies and requirements.¹⁸
- Language, Literacy and Numeracy (LLN) skills across the industry have been flagged as a potential area for development. Issues include technical staff not being able to understand written instructions, as well as older workers being unfamiliar with new technologies and having poor computer literacy. In some instances, it has been indicated that poor literacy is preventing further training.¹⁹

¹⁶ Government Skills Australia, 2013 *Environmental Scan*

¹⁷ Government Skills Australia, 2013 *Environmental Scan*

¹⁸ Government Skills Australia, 2013 *Environmental Scan*; Construction & Property Services Industry Skills Council, *Environmental Scan 2013-14*

¹⁹ Government Skills Australia, 2013 *Environmental Scan*; Construction & Property Services Industry Skills Council, *Environmental Scan 2013-14*

Water and Waste Services vocational training provision

This section focuses on training provided for the Water and Waste Services industry. It covers training activity including a regional analysis, courses, providers and student characteristics.

Key messages, issues and challenges

- Government subsidised enrolments in Water and Waste Services courses have decreased over the five years between 2008 and 2013, down by 37 per cent to approximately 150 enrolments.
- A relatively high proportion of Water and Waste Services enrolments were traineeships – 76 per cent of enrolments in 2013, compared with an average across all industries of 13 per cent.
- Recycling or Rubbish Collector was the largest occupational grouping, representing 71 per cent of all enrolments across the industry in 2013. The course with the highest number of enrolments was the Certificate III in Asset Maintenance (Waste Management) with 70 enrolments.
- The majority of training was with private training providers, accounting for 72 per cent of enrolments in 2013. This proportion has increased from 65 per cent in 2012.
- In 2013, the largest region in terms of Water and Waste Services training delivery was Hume, accounting for 38 per cent of industry enrolments.
- Culturally and Linguistically Diverse (CALD) enrolments represented 10 per cent of all Water and Waste Services enrolments in 2013. Five per cent of 2013 enrolments were by students reporting a disability.
- The age profile of Water and Waste Services students was older than the average student age profile across all industry training. Ninety-one per cent of students in this industry were aged 25 or older compared with an all-industry average of 56 per cent.
- While this older student profile is reflective of the industry's ageing workforce, it highlights potential opportunities to be had in attracting younger students into the industry.
- Barriers to training identified by the industry include lack of time to attend training; availability of training; distance of training from the workplace; and, cost.²⁰

²⁰ Government Skills Australia, *Environmental Scan 2013*; Australian Water Association, *National Water Skills Audit Report 2011*

- Industry stakeholders have also flagged thin training markets as an issue, particularly in the Water sub-sector. This is a particular concern for smaller water operators spread throughout regional and rural areas.
- Opportunities for future development in industry training delivery include developing the availability and up-take of online learning as one means of addressing challenges operators have flagged with accessing training in more rural locations.²¹

Training activity

Table 4.1 overleaf gives a summary of training activity for the Water and Waste Services industry over the period 2008 to 2013.

Enrolments

Government subsidised enrolments in Water and Waste Services courses have decreased between 2008 and 2013, down 33 per cent to around 150 from 2008.

Between 2012 and 2013, government subsidised enrolments in Water and Waste Services qualifications declined by 46 per cent. This shift reflects the realignment of training under the *Refocusing Vocational Training in Victoria* (RVT) reform package in May 2012. Under RVT, government subsidies have been rebalanced to direct public investment in training to where it is most needed.²²

Apprentices and trainees

There were approximately 100 traineeship enrolments in courses aligned to Water and Waste Industry in 2013, 76 per cent of all enrolments in this industry. The occupation of Recycling or Rubbish Collector accounted for the highest proportion of trainees, representing 92 per cent of total traineeship enrolments.

²¹ Government Skills Australia, *Environmental Scan 2013*

²² The highest subsidy levels are allocated to courses where their contribution to the economy is assessed as high, and where government subsidy is seen as essential to enable delivery of and participation in training. Lower subsidy levels may indicate evidence of over-supply, or that less government support is required to promote training in these areas. For example, diplomas often attract lower subsidy rates in recognition of the greater private benefits flowing to students from completing these qualifications and because students can access financial support through VET FEE-HELP to meet upfront costs.

Specialised and in-shortage occupations

Approximately 71 per cent of Water and Waste Services enrolments were linked to specialised occupations or those considered to be in-shortage in Victoria. This has increased from 2008, when 43 per cent of enrolments were aligned to specialised or in-shortage occupations.

Qualification level

A high proportion of Water and Waste Services enrolments were at the Certificate III–IV level (89 per cent). This is slightly higher than the all-industry average (75 per cent).

Completed qualifications

In 2013, qualification completions aligned to the Water and Waste Services industry increased by around three per cent when compared with 2012.

Table 4.1: Key training activity in the Water and Waste Services industry, 2008 to 2013

Government Subsidised Enrolments						
Industry sub-sector	2008	2009	2010	2011	2012	2013
Waste Collection, Treatment and Disposal Services	100	100	70	150	200	100
Water Supply, Sewerage and Drainage Services	150	80	150	50	70	50
Total	250	200	200	200	300	150

Apprentice or trainee						
Industry sub-sector	2008	2009	2010	2011	2012	2013
Apprentice	-	<10	-	-	-	-
Trainee	150	150	80	150	200	100
Total	150	150	80	150	200	100

Specialised or in-shortage						
Industry sub-sector	2008	2009	2010	2011	2012	2013
Course Enrolments	1,400	1,200	1,400	1,200	1,200	1,200
Total	1,400	1,200	1,400	1,200	1,200	1,200

Qualification levels – 2013		
	Enrolments	% total
Certificate I-II	20	11%
Certificate III-IV	150	89%
Total	160	100%

Completed qualifications						
Industry sub-sector	2008	2009	2010	2011	2012	2013
Waste Collection, Treatment and Disposal Services	60	80	30	70	90	100
Water Supply, Sewerage and Drainage Services	150	150	150	70	150	150
Total	200	250	200	150	250	250

Courses

Seven qualifications within the Water and Waste Services industry saw government subsidised enrolments in 2013, as listed in Table 4.2 below.

Table 4.2: Water and Waste Services qualifications ranked by 2013 enrolments, government subsidised, 2008 to 2013

Course Name	2008	2009	2010	2011	2012	2013
Certificate III in Asset Maintenance (Waste Management)	100	80	50	150	150	70
Certificate III in Water Operations	-	20	<10	10	20	20
Certificate IV in Asset Maintenance (Waste Management)	<10	<10	<10	30	50	20
Certificate IV in Waste Management	-	-	-	-	-	20
Certificate II in Water Operations	-	40	100	10	10	20
Certificate IV in Water Operations	-	-	10	<10	<10	<10
Certificate III in Waste Management	-	-	-	-	-	<10
Diploma of Water Operations	-	-	-	<10	10	-
Certificate II in Asset Maintenance (Waste Management)	-	20	10	<10	<10	-
Diploma of Environmental Management	<10	-	-	-	-	-

Note: course totals include equivalent superseded courses.

Enrolments by occupation

The largest occupation in terms of 2013 training delivery was Recycling or Rubbish Collector which accounted for 71 per cent of industry enrolments and which showed a decline over the period 2012 to 2013 (decreasing by 51 per cent).

Waste Water or Water Plant Operator was the next largest occupation by enrolments, with 50 enrolments in 2013. Together these occupations accounted for all training delivery aligned to the Water and Waste Services industry in 2013.

Table 4.3: Water and Waste Services occupations ranked by 2013 enrolments, government subsidised, 2008 to 2013

Occupation	2008	2009	2010	2011	2012	2013
Recycling or Rubbish Collector	100	100	70	150	200	100
Waste Water or Water Plant Operator	60	70	150	30	50	50
Earth Science Technician	-	-	-	<10	10	-
Environmental Consultant	70	<10	<10	20	<10	-

Please see Appendix A for occupations and associated qualifications with funding bands (available for 2012 and 2013).

Training providers

A total of five training providers delivered government subsidised Water and Waste Services training in 2013; however, only one provider delivered 50 or more enrolments.

The number of providers delivering government subsidised training has decreased from seven in 2008.

The majority of training is with private training providers, who accounted for around 72 per cent of industry enrolments in 2013. This has increased from 19 per cent in 2008 and 65 per cent in 2012.

Table 4.4: Proportion of enrolments by provider type, government subsidised, 2008 to 2013

Provider Type	2008	2009	2010	2011	2012	2013
Private	19%	31%	20%	61%	65%	72%
TAFE	81%	69%	80%	39%	35%	28%
Learn Local	<1%	-	-	-	-	-

Funding patterns

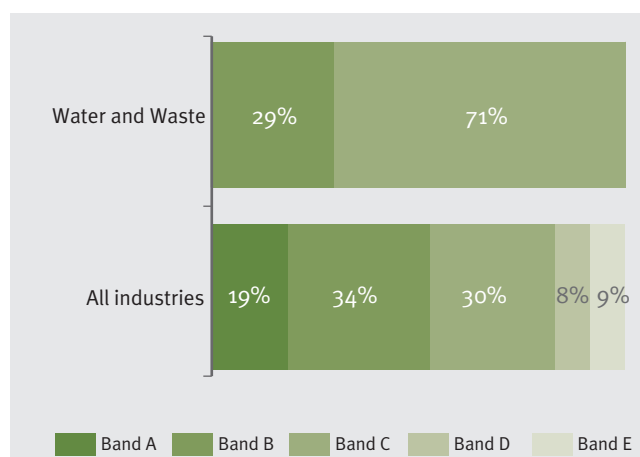
From July 2012 funding bands for government subsidised training were introduced. The allocation of funding within these bands is designed to better target areas of greatest public benefit and future jobs growth. Where there is not a strong need for Government support the training subsidies are lower.

Enrolments by funding band

Seventy-one per cent of enrolments in Water and Waste Services courses in 2013 were in subsidy Band C. A further 29 per cent were in Band B.

See Appendix A for a list of courses and associated subsidy bands.

Figure 4.1: Enrolments by subsidy band, government subsidised, 2013



Regional training activity

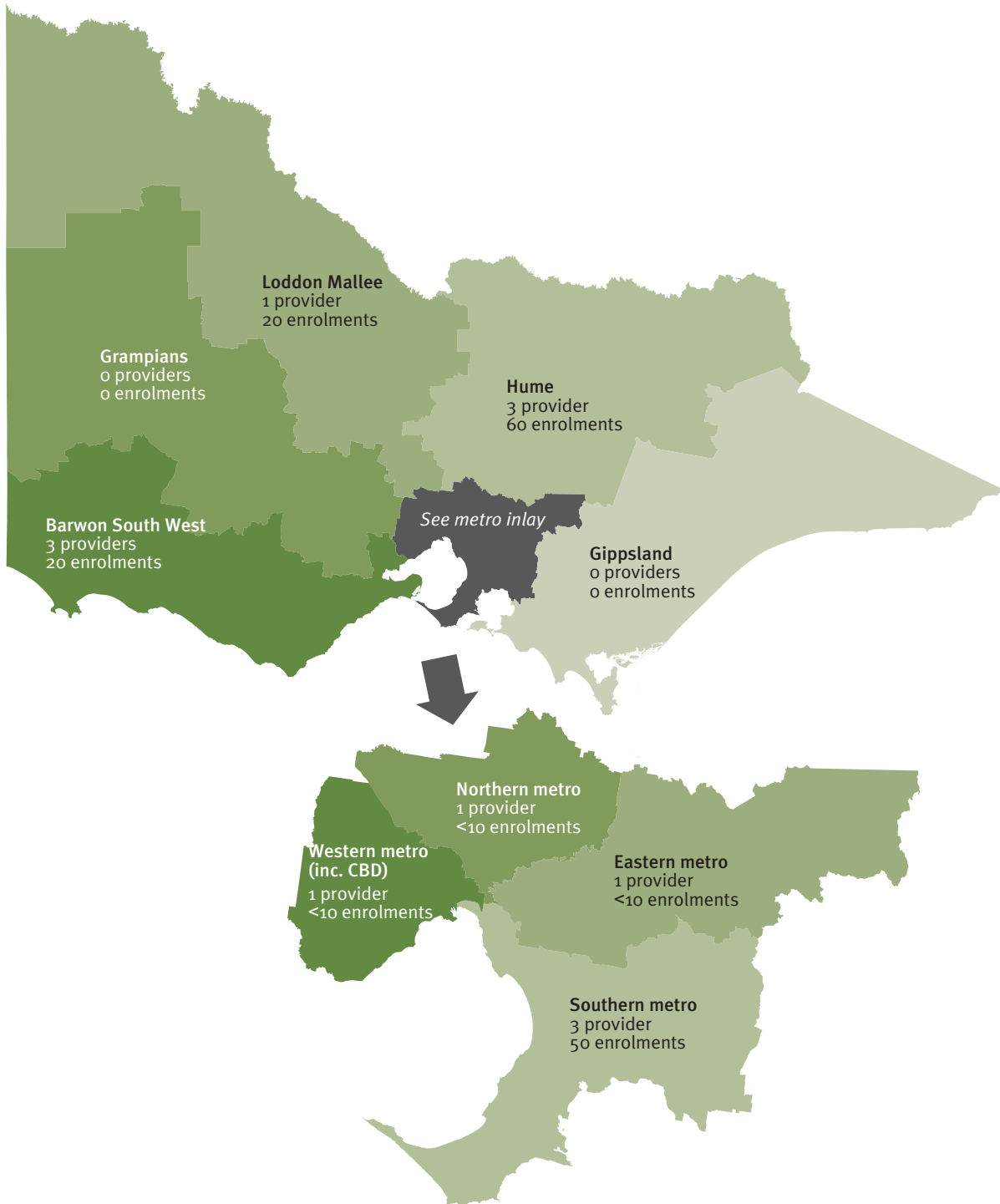
In 2013, the largest region in terms of Water and Waste Services training delivery was Hume, accounting for 38 per cent of industry enrolments. Southern Metropolitan is the next largest region with 31 per cent.

Table 4.5: Victorian regions ranked by 2013 enrolments, government subsidised, 2008 to 2013

Region	2008	2009	2010	2011	2012	2013
Hume	20	10	20	60	100	60
Southern Metropolitan	40	50	20	20	60	50
Loddon Mallee	-	-	-	<10	20	20
Barwon South West	70	70	30	60	60	20
Northern Metropolitan	<10	<10	-	<10	<10	<10
Eastern Metropolitan	70	20	10	20	<10	<10
Western Metropolitan	-	-	20	<10	20	<10
Gippsland	<10	10	90	-	-	-

Note: regional enrolment figures sum to slightly more than the overall Victoria-wide figures due to a small number of students undertaking training in campuses in more than one region

Figure 4.2: Water and Waste Services industry training providers and enrolments, 2013



Student characteristics

Students from diverse backgrounds engage in vocational training in Water and Waste Services fields. Students from a Culturally and Linguistically Diverse (CALD) background represented 10 per cent of enrolments in this industry, while unemployed students accounted for around one per cent of the total. Five per cent of students flagged that they had a disability.

The age profile of Water and Waste Industry students was relatively older when compared with the average student age profile across all industry training. Ninety-one per cent of students in this industry were aged 25 or older compared with an all-industry average of 56 per cent. This is reflective of the ageing workforce profile of the industry.

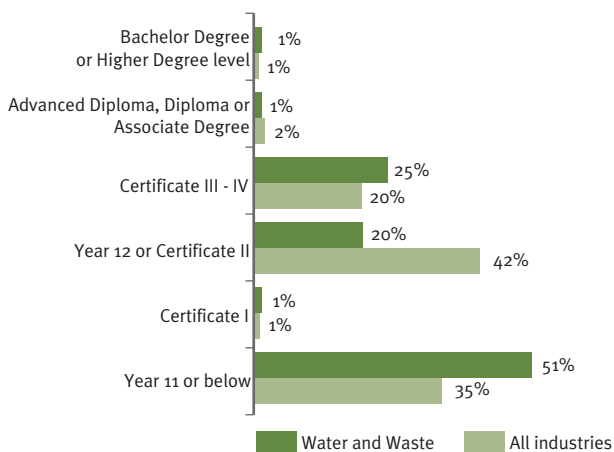
Table 4.6: Learners Facing Barriers enrolments, government subsidised, 2008 to 2013

Learner Groups	2008	2009	2010	2011	2012	2013
Indigenous	-	-	<10	<10	<10	-
Disability	20	10	10	10	10	<10
CALD	30	20	20	10	20	20
Unemployed	<10	<10	60	<10	20	<10
Age 25 +	150	150	150	150	250	150

At the time of enrolment, students enrolling in Water and Waste Industry courses were less likely than the average across all industries to have completed Year 12 or Certificate II but more likely to have completed Certificate III or higher.

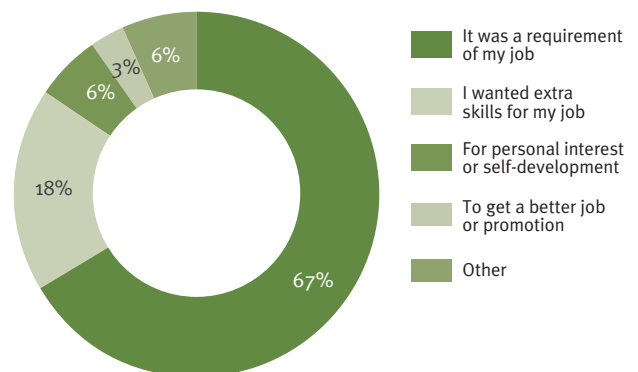
Within the industry, 27 per cent of enrolments were by students with a highest prior qualification of Certificate III or above, compared with an average of 23 per cent across all industries (see Figure 4.3).

Figure 4.3: Enrolments by highest prior qualification, government subsidised, 2013



The main reasons students were enrolling in vocational training related to Water and Waste Industry were 'Job Requirement' (67 per cent), 'Extra Skills' (18 per cent) and 'Personal Interest' (six per cent).

Figure 4.4: Enrolments by reason for study, government subsidised, 2013



Note: 'Other' includes 'To get a job', 'To try for a different career', 'To get into another course of study', 'To develop my existing business'.

Appendix A

Table 5.1: Enrolments by occupation, course and subsidy band, 2012 and 2013

Occupation	Course name	Funding band	2012	2013
Earth Science Technician	Diploma of Water Operations	Band C	10	-
	Total		10	-
Environmental Consultant	Vocational Graduate Certificate in Water Industry Leadership	Band C	<10	-
	Total		<10	-
Recycling or Rubbish Collector	Certificate II in Asset Maintenance (Waste Management)	Band C	<10	-
	Certificate III in Asset Maintenance (Waste Management)	Band C	150	70
	Certificate III in Waste Management	Band C	-	<10
	Certificate IV in Asset Maintenance (Waste Management)	Band C	50	20
	Certificate IV in Waste Management	Band C	-	20
Total		200	100	
Waste Water or Water Plant Operator	Certificate I in Water Sustainability	Band B	20	-
	Certificate II in Water Operations	Band B	10	20
	Certificate III in Water Operations	Band B	20	20
	Certificate IV in Water Operations	Band B	<10	<10
Total		50	50	
Grand Total			300	150

