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Purpose
The aim of this paper is to highlight Western Australia’s employment trends over recent years, as well as their short to medium term prospects, based on modelling provided by Monash University.¹

Employment growth is analysed on two separate four year timeframes, examining the historical period between 2007–08 and 2011–12 (based on Australian Bureau of Statistics (ABS) data), and the forecast period between 2011–12 and 2015–16 (using ABS data as the base and extrapolating forward using the Monash employment growth projections).

It is envisaged that this publication will be used by both employers and job seekers to provide an understanding of current employment trends and the prospects of future jobs growth. However, caution should be exercised in interpreting the employment forecasts. The forecasts should be treated as an indicative picture of what the State’s future labour market may look like given expected growth trajectories.

The paper has three main sections focusing on employment at the industry, occupation and qualification levels.

Summary
According to the ABS, 1.26 million people were employed in Western Australia at the end of 2011–12, representing 11% of the national total.

Currently, nearly a third of all people employed in the State are working in the three biggest industry sectors: healthcare and social assistance; retail trade; and construction.

Even so, demand for labour in the State is strongly associated with the resources sector. While the 103 600 people directly employed in the State’s mining industry means it currently ranks as Western Australia’s fourth largest employer, the industry also has important flow on effects to other industries, creating additional jobs throughout the economy.

The significant expansion of the resources sector in the latter part of the last decade saw the State record strong employment growth. The impetus provided from the State’s expanding resource sector over the past half decade resulted in above-trend employment growth in all years except 2009–10 (when employment growth fell to an annual rate of only 0.3%, due to the global economic downturn).

Consistent with this, ABS data shows the largest growth in employment levels in the State for the four years to 2011–12 was led by the mining industry (44 800 additional jobs). However, not all growth was resource related, with

¹ The parts of this paper referring to the outlook for various employment categories have been based on detailed labour market projections taken from the Monash model, developed by the Centre of Policy Studies at Monash University (and based on information available as at December 2011). It should be noted that there is a certain degree of uncertainty attached to any forecast — see Appendix A for more information.
the second and third highest growth coming from healthcare and social assistance (26 000 additional jobs); and accommodation and food sectors (12 100) respectively. These three industries accounted for 69.3% of all jobs growth during the period.

During the same four year period, a few industries recorded declining employment levels, most notably manufacturing (7300 less jobs); and agriculture, forestry and fishing sector (decline of 5600 jobs).

On an occupational basis, strong employment growth over the four years to 2011–12 was recorded for technicians and trades workers (23 500 persons), machinery operators and drivers (22 700 persons), and community and personal service workers (22 400).

On a qualification basis\(^2\), the biggest increases in employment levels were persons with certificate III or IV training (64 100 persons), persons with no post-school qualifications (32 600 persons) and those with bachelor degree (20 700). Job levels for persons with certificate I or II fell by 17 700.

**Outlook**

The Western Australian economy came out of the global economic downturn in relatively sound shape. The State’s economy is backed by very high levels of investment activity on projects either already underway or committed to. Deloitte Access Economics' *Investment Monitor* shows the State had $287.9 billion worth of confirmed or potential major investment projects as at December quarter 2012. Activity relating to the resource sector’s pipeline of work yet to be done is expected to result in a sustained increase in the demand for labour over the next four years.

Employment growth is expected to be driven by the resources sector, mainly relating to construction and operational phases. However, this does not mean that mining related jobs will dominate employment growth. Indeed, around 40% of jobs growth over the next four years is expected to come from the industries of health care and social care; professional, scientific and technical services; and education and training.

Current levels of global economic uncertainty combined with declines in consumer and business confidence are impacting some sectors outside of the resources sector. While some industries are still experiencing patchy conditions due to crowding out by the growth of resources or the effects of a persistently high Australian dollar, the State’s economy is continuing on a broad recovery trajectory.

According to the Monash projections for the four years to 2015–16, the largest growth in employment levels is expected to occur in construction (21 200 jobs, at an annual average growth rate of 4.0%); health care and social assistance (19 300 jobs, at 3.3% annual average growth); and professional, scientific and technical services (19 100 jobs, at 4.3% annual average growth). Other high-growth sectors include community and personal service workers (21 200 jobs, at 4.5% annual average growth); and trades workers (20 700 jobs, at 4.7% annual average growth).

\(^2\) Historical data for qualifications employment in this paper are based on the back-cast results provided from the Monash model, as detailed comparable data from the ABS is not available.
technical services (14 200 jobs at 3.6%). Together, these three industries are projected to account for almost half of all new jobs over the period. However, two industries are projected to record decreases in employment over the forecast period – agriculture, forestry and fishing (3200 less jobs); and manufacturing (3200 less jobs).

Western Australian employment growth by industry* 2007–08 to 2015–16

<table>
<thead>
<tr>
<th>Industry</th>
<th>Actual growth 2007-08 to 2011-12</th>
<th>Projected growth 2011-12 to 2015-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture, forestry and fishing</td>
<td>-3,200</td>
<td>44,800</td>
</tr>
<tr>
<td>Mining</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manufacturing</td>
<td>-7,300</td>
<td></td>
</tr>
<tr>
<td>Electricity, gas, water and waste services</td>
<td>300</td>
<td></td>
</tr>
<tr>
<td>Construction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wholesale trade</td>
<td>2,000</td>
<td></td>
</tr>
<tr>
<td>Retail trade</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accommodation and food services</td>
<td></td>
<td></td>
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<tr>
<td>Transport, postal and warehousing</td>
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<tr>
<td>Information media and telecommunications</td>
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<tr>
<td>Financial and insurance services</td>
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<tr>
<td>Rental, hiring and real estate services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional, scientific and technical services</td>
<td>6,000</td>
<td></td>
</tr>
<tr>
<td>Administrative and support services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public administration and safety</td>
<td>6,400</td>
<td></td>
</tr>
<tr>
<td>Education and training</td>
<td>9,200</td>
<td></td>
</tr>
<tr>
<td>Health care and social assistance</td>
<td>6,100</td>
<td></td>
</tr>
<tr>
<td>Arts and recreation services</td>
<td>-400</td>
<td></td>
</tr>
<tr>
<td>Other services</td>
<td>1,200</td>
<td></td>
</tr>
</tbody>
</table>

Source: Monash December 2011 and ABS Cat. 6291.0
Note: Figures are rounded to the nearest 100.
*Industry is classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC) 2006.

Over the forecast period, the three occupational groupings expected to experience the strongest increases in employment growth are professionals (31 100); technicians and trades workers (20 600); and clerical and
administrative workers (15 600). Together, these groups are predicted to account for 61.4% of jobs growth in the next four years.

In the four years to 2015–16, persons with the following qualifications are expected to lead future jobs growth: certificate III or IV (36 300 jobs); bachelor degree (35 000); and diploma (21 100). Collectively, these three qualifications are expected to account for 85% of the State’s total employment growth.

Further detail in relation to growth profiles specific to industries, occupations and qualifications is contained in the following sections of this document.

For more information on the State’s economy and labour market (including by industry and regions) see the Department of Training and Workforce Development’s website industry profiles and regional profiles under the Western Australia profile section: www.dtwd.wa.gov.au.

**Forecast caution**

It is cautioned that in the current changing economic environment, it is very difficult for forecasters to predict in detail specific movements in employment growth, particularly in the medium or longer term, as there are many uncertainties to be considered.

While the forecasts referenced in this report have been compiled with due care and diligence, forecasts can differ due to the impact of many factors including data sources used; models and modelling techniques used; and a range of underlying assumptions.

Care should therefore be exercised when interpreting forecast movements (particularly the detailed employment forecasts). The forecasts should be treated as an indicative picture of what the State’s future labour market may look like given expected growth trajectories.

See Appendix A for more detail.

**Employment growth by industry, 2007–08 to 2015–16**

**Agriculture, forestry and fishing**

In 2011–12, average employment in the agriculture, forestry and fishing industry was around 35 500 persons, or 2.8% of all persons employed in Western Australia. The industry is made up of agriculture; aquaculture; forestry and logging; fishing, hunting and trapping; and agriculture, forestry and fishing support services.

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3 The levels shown in the charts in the following sections are averages across the full financial year (rather than the employment level at the end of each calendar year).
Over the four year period to 2011–12, this industry experienced a fluctuating downward trend in employment, losing 5600 jobs. Employment has fluctuated as climate factors and business uncertainty impacted the industry. The closure or downsizing of some food processing and manufacturing businesses, particularly in the south west of the State, has impacted local primary producers. International issues surrounding live export and grain sales have also added uncertainty to the industry. Declines may continue as cost pressures mount on an industry that competes heavily with resources projects for regionally based labour.

By 2015–16, Monash forecasts show that there will be 32 200 Western Australians working in this industry. This represents a further decline in employment of around 3200 jobs during the period. The decline in employment is expected to be driven by the agriculture sector of the industry. There are various reasons for the forecasted decline in employment, including a high Australian dollar (reducing the competitiveness of export oriented industries like agriculture) and continued competition for labour from the resources sector.

**Mining**

Western Australia’s economy has a significant mining and resources sector, largely driven by extraction, processing and exporting of a diverse range of mineral and petroleum commodities. The mining industry covers oil, gas and minerals such as iron ore, coal, uranium, nickel, bauxite, gold, lead, copper, zinc, mineral sands and diamonds.
In 2011–12, the mining industry in the State directly employed 103,600 persons (8.2% of total employment). The mining industry comprises the following five sectors: coal mining; oil and gas extraction; metal ore mining; non-metallic mineral mining and quarrying; and exploration and other mining support services. Mining's contribution to Gross State Product (GSP) is the highest of all industries, providing 34.6% of GSP in 2011–12, yet it only ranks as the fourth largest employer due to its capital intensive nature.

Over the four year period to 2011–12, this industry experienced exceptionally strong growth in employment, gaining 44,800 jobs. This represents a 76.3% increase, the strongest employment growth of all industries in percentage terms in the four year period to 2011–12. The biggest increase was in metal ore mining, adding 30,100 jobs, as major construction projects were completed and new mines and expansions became operational.

Growth is expected to continue as further major projects complete construction over the following years and enter operations. Iron ore production in the State is forecast to grow by 32%, from 499 Mt in 2012–13 to 659 Mt in 2015–16. LNG output is expected to grow by 35 Mt by 2016–17. Despite these positive signs the industry is heavily exposed to international market

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4 Major resource related processing industries include conversion of bauxite into alumina, and the conversion of natural gas into liquefied natural gas (LNG). However, employment in these industries is classified as manufacturing (see next section). Similarly, while the construction phases of mining projects are typically more labour intensive than their operational phases, the employment directly related to the development of such projects gets classified as belonging to the construction industry, rather than mining (see section on construction employment further on in this document).

5 ABS Cat. No. 5220.0, State Accounts, 2011–12 (current prices).

6 Western Australian Department of Treasury, 2012–13, Budget Paper No. 3, May 2012.

7 Western Australian Department of State Development, WA Economic Profile, December 2012.
conditions and price fluctuations in commodities can lead to quick employment changes, as seen during the global economic downturn in 2008–09 and more recently in the second half of 2012.

Figures show the majority of the growth is likely to come from metal ore mining and non-metallic mineral mining and quarrying. Coal mining has remained largely steady. Oil and gas extraction is a growth industry with significant major projects still under construction in the State’s northwest set to be completed in the coming years. Employment in this part of the industry is expected to grow, though overall numbers will remain relatively low compared to metal ore mining due to the capital focused nature of extraction.

By 2015–16, Monash is predicting that there will be 110 400 Western Australians working in this industry. This represents a modest increase in employment of 6700 jobs. According to Deloitte Access Economics’ Investment Monitor, around $115.7 billion worth of mining projects were either committed to or under construction in the State as at September 2012. Correspondingly, the operational phases of these projects, once completed, will help boost employment levels in the industry.

Manufacturing
In 2011–12, the manufacturing industry employed 92 000 persons or 7.3% of persons employed in the State. The manufacturing industry consists of 15 sectors including food product manufacturing; beverage and tobacco product manufacturing; textile, leather, clothing and footwear manufacturing; and petroleum product manufacturing.

Source: Monash, December 2011 and ABS Cat. 6291.0 (year average levels shown)

Over the four years to 2011–12, manufacturing employment in the State fell by 7300 jobs (down 7.3%). This was by far the biggest decline in employment, in terms of jobs lost, recorded by any industry in the State during this period. The sectors which experienced the largest declines were food product
manufacturing (3000 less jobs); fabricated metal product manufacturing (2200 jobs); and textile, leather, clothing and footwear manufacturing (1600 jobs).

Company closures impacted on food product processing; beverage and tobacco product manufacturing; textile, leather, clothing and footwear manufacturing; and wood product manufacturing.

The only growth reported in the four years to 2011–12 was related to the resources sector, such as machinery and equipment manufacturing; and primary metal and metal product manufacturing.

By 2015–16, Monash predicts that there will be 88 800 employed in the State’s manufacturing industry, representing a fall in employment of 3200 jobs. Parts of the manufacturing industry are expected to experience continued challenging conditions during the forecast period due to factors like the high Australian dollar (making Western Australian manufactured exports less competitive) and related to this, increased competition from the major countries that Australia typically imports manufactured goods from.

Electricity, gas, water and waste services
In 2011–12, the electricity, gas, water and waste services industry employed 16 400 persons (1.3% of all employment in Western Australia). This is a very capital intensive and highly automated industry, thus making it the State’s second smallest employer (after the information media and telecommunications industry). This industry is divided into four sectors: electricity supply; gas supply; water supply, sewerage and drainage services; and waste collection, treatment and disposal services.

![Electricity, gas, water and waste services](image)

Source: Monash, December 2011 and ABS Cat. 6291.0 (year average levels shown)

Over the four year period to 2011–12, the utilities industry in Western Australia grew by 2000 jobs or 13.7%. A significant proportion of these jobs
came from waste collection, treatment and disposal services (1800 new jobs); and electricity supply (1000 jobs), reflecting the demand from strong population growth in the State in the same period.

Demand is largely dependent on population levels and public spending on utilities and related services at the State and local government level. However, this industry is also in demand by employers from the resources sector which operate small privately held utilities, particularly power generation.

According to Deloitte Access Economics *Investment Monitor* September 2012, there were a number of major utility infrastructure projects underway in the State valued around $2.1 billion, including BHP Billiton’s Yarnima power station, the Mundaring water treatment plant and a range of Western Power transmission line upgrade projects. However, once operational, these types of projects are typically technology driven rather than being labour intensive.

By 2015–16, Monash is predicting that there will be 16 700 Western Australians working in this industry, an overall increase of 300 jobs. Employment growth is predicted for the waste collection, treatment and disposal services; and gas supply sectors in particular.

**Construction**

In 2011–12, the construction industry employed 125 900 persons or 10.0% of persons employed in Western Australia, making it the State’s third largest employing industry. The construction industry is divided into: building construction; heavy and civil engineering construction; and construction services.

Over the four year period to 2011–12, the construction industry in Western Australia grew by 4200 jobs or 3.5%. Most of this growth came from heavy and civil engineering construction (2100 new jobs), while other construction sectors contracted due to subdued conditions in the residential sector. The expansion in the mining sector itself resulted in a sizable construction program (mainly in civil and heavy engineering).

By 2015–16, Monash is forecasting that there will be 147 100 Western Australians employed in this industry, elevating its position to the State’s second biggest employer. This represents an increase of 21 200 jobs, with most of this (almost 14 000) expected to occur in the construction services sector. While this is very strong growth (the strongest of all industries in terms of the number of new jobs and the percentage change), it is worth noting it is off a low 2011–12 base.
Future employment growth in this industry is underpinned by the strong demand for engineering construction related to the State’s robust resources sector and improved prospects for the residential sector.

**Wholesale trade**
In 2011–12, the wholesale trade industry employed 41 700 persons or 3.3% of all persons employed in Western Australia. The industry is divided into six sectors: basic material wholesaling; machinery and equipment wholesaling; motor vehicle and motor vehicle parts wholesaling; grocery, liquor and tobacco product wholesaling; other goods wholesaling; and commission based wholesaling.

Over the four year period to 2011–12, the wholesale trade industry in Western Australia grew by 6500 jobs or 18.5%. While most of the sectors in the industry recorded employment growth over this period, motor vehicle and other vehicle parts wholesaling; and other goods wholesaling recorded declines.

By 2015–16, Monash is predicting that there will be 45 500 Western Australians employed in this industry. This represents an increase in employment of 3800 jobs, with the basic material wholesaling industry expected to record the largest employment growth of 1100 jobs.
Retail trade
In 2011–12, the retail trade industry employed 128 600 persons, or 10.2% of the workforce, making it the second largest employer in the State. The industry consists of five broad sectors, including motor vehicle and motor vehicle parts retailing; fuel retailing; food retailing; other store based retailing; and non-store retailing and retail commission based buying and/or selling. Growth in retail trade is relatively closely correlated with the economic cycle given the industry relies heavily on consumer spending.8

Over the four years to 2011–12, the retail trade industry in Western Australia grew by 6300 jobs, or 5.2%. Most sectors recorded an increase in employment growth, including motor vehicle retailing, food retailing and fuel retailing. However, other store based retailing (consisting of electrical and electronic goods, furniture, floor coverings and hardware and building and garden supplies) declined by 3600 jobs.

Over the past year retail trade has been seceded by health care and social services as the highest employing industry. The Reserve Bank of Australia9 has noted a change occurring in household spending behavior towards increasing savings and reducing debt. Recent uncertainty regarding the local economic future by consumers and the continuing rise of online shopping and digital product purchases have all contributed to the changing trend for employment in this industry. Trended ABS retail sales figures for Western Australia support this, with strong growth in turnover for food related

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8 Retail trade industry profile, report commissioned by Australian Fair Pay Commission, 2009
businesses\textsuperscript{10}, but only modest gains for other retail sectors that rely on discretionary spending\textsuperscript{11}.

![Retail trade Total employment 2007–08 to 2015–16](image)

Source: Monash, December 2011 and ABS Cat. 6291.0 (year average levels shown)

In the four year period to 2015–16, Monash is forecasting that there will be 133 300 Western Australians employed in this industry. This represents an increase in employment of 4700 jobs, representing growth of 3.7%. Employment growth is expected across most retailing sectors.

**Accommodation and food services**

In 2011–12, the accommodation and food services industry employed 73 600 persons or 5.9% of total employment in the State. The industry is divided into two sectors: accommodation; and food and beverage services. The majority of workers in accommodation and food services do not hold post-school qualifications reflecting the industry’s role as an entry point to the labour market for school leavers, students and part time workers\textsuperscript{12}.

Over the four years to 2011–12, the accommodation and food services industry in Western Australia grew strongly by 12 100 jobs, or 19.7%. All of this jobs growth came from the food and beverage services sector of the industry (this includes cafes, restaurants, food services and pubs). ABS retail figures for Western Australia relating to food services have seen combined turnover increase by approximately 80% over the past four years\textsuperscript{13}.

Employment in accommodation has remained largely stable over the same period.

\textsuperscript{10} Note: Retail sales figures for takeaway food services, cafes, restaurants and catering services etc. lead to employment growth under the accommodation and food services industry under ANZSIC.

\textsuperscript{11} ABS Cat. No. 8501.0, Retail Turnover; State by Industry Subgroup, Trend data.

\textsuperscript{12} Skills Australia, 2010. Industry Snapshots, Accommodation and Food Services.

\textsuperscript{13} ABS Cat. No. 8501.0, Retail Turnover; State by Industry Subgroup, Trend data.
By 2015–16, Monash predicts there will be 77 200 Western Australians employed in the industry, representing a modest increase in employment of 3600. Most of the jobs growth is expected to come again from the food and beverage services sector. However, the segments of the industry relating to tourism are being impacted negatively by a persistently high Australian dollar.

**Transport, postal and warehousing**
In 2011–12, the transport, postal and warehousing industry employed 59 900 persons or 4.8% of total employment. The transport, postal and warehousing industry is divided into road transport; rail transport; water transport; air and space transport; other transport; postal and courier pick up and delivery services; transport support services; and warehousing and storage services.

Over the four years to 2011–12, the transport, postal and warehousing industry in Western Australia grew by 6500 jobs (or 12.1%), with the transport support services sector (including stevedoring; airport operations and other air transport support; and customs agency services) experiencing particularly strong growth (up 3700 jobs).

By 2015–16, Monash forecasts that there will be 65 600 Western Australians employed in this industry. This represents an increase in employment of 5800 jobs. Consistent with the development of major resource and infrastructure projects throughout the State, most of the jobs growth is expected in the road transport sector.
Information media and telecommunications

In 2011–12, the information media and telecommunications industry employed 13 100 persons (1.0% of total employment), making it the smallest employing industry in the State. This industry consists of seven sectors: publishing (except internet and music publishing); motion picture and sound recording activities; broadcasting (except internet); internet publishing and broadcasting; telecommunications services; internet service providers, web search portals and data processing services; and library and other information services.

Over the four years to 2011–12, employment in the information media and telecommunications industry in Western Australia declined by 3100 persons (a fall of 19.1%). This is the third biggest decline in employment levels recorded by any industry in the State during this period, however, it was the largest one in percentage terms, indicating structural changes for this sector. These job losses occurred in a number of sectors, with telecommunication services industry recording the biggest decline, as major telecommunications companies cut back on staff numbers.

By 2015–16, Monash is predicting that there will be 14 600 Western Australians employed in this industry. This represents an increase in employment of 1500 jobs, with expected growth spread across all sectors.
Financial and insurance services
In 2011–12, the financial and insurance services industry employed 28 900 persons or 2.3% of the persons employed in the State. The industry is divided into three sectors: finance; insurance and superannuation funds; and auxiliary finance and insurance services.

In the four years to 2011–12, employment in the State’s financial and insurance services industry fell by 2100 (down 6.9%). Banking, credit union and building society services fell by 1900 jobs, reflecting a general trend of households reducing their borrowings. The only jobs growth over the period came from insurance and superannuation funds services (500 jobs).

By 2015–16, Monash forecasts that there will be 31 600 Western Australians employed in this industry. This represents an increase in employment of 2700 jobs. The finance sector, including the banks and credit unions, is predicted to grow strongly.
Rental, hiring and real estate services

In 2011–12, the rental, hiring and real estate services industry employed 25,300 persons or 2.0% of the persons employed in the State. This relatively small industry is divided into two main sectors: rental and hiring services (excepting real estate services); and property operators and real estate services.

Over the four years to 2011–12, employment in the rental, hiring and real estate services industry in Western Australia rose by 2,100 jobs, representing a 9.3% increase, with strong growth occurring in the property operators and real estate sector of the industry. It should be noted that the property operators and real estate sector was particularly affected by the global economic downturn, but has made a strong recovery since then.

By 2015–16, Monash estimate that there will be 28,000 Western Australians working in the industry, an increase of 2,800 jobs (with stronger growth coming from the real estate sector).
Professional, scientific and technical services

In 2011–12, the professional, scientific and technical services industry employed 94 000 persons or 7.5% of all persons employed in the State. This industry is divided into two sectors: professional, scientific and technical services; and computer system design and related services.

The professional, scientific and technical services industry in Western Australia includes a large number of high level skilled occupations working for companies providing architectural, engineering, technical services, legal and accounting services.

Over the four years to 2011–12, employment in the professional, scientific and technical services industry increased by 6900 jobs or 7.9%. This included 3900 new jobs in the professional, scientific and technical services sector and 3000 additional jobs in the computer system design and related services.

The State’s resource sector has contributed to strong demand for engineering and scientific professions. Increased and widespread use of information and communication technology has also lead to a steady increase in the need for computing relation professionals.
By 2015–16, Monash forecasts that 108 200 Western Australians will be employed in this industry, representing growth of 14 200 jobs. This is the third largest increase in the number of new jobs expected by any industry in the State during this period. While the professional, scientific and technical services sector of the industry is predicted to grow by 12 300 jobs, computer system design and related services is expected to increase by 1900 jobs.

**Administrative and support services**

In 2011–12, the administrative and support services industry employed 40 400 persons or 3.2% of persons employed in the State. This industry is divided into two sectors: administrative services; and building cleaning, pest control and other support services.

Over the four years to 2011–12, employment in the administrative and support services industry increased marginally by 200 people or 0.4%. Building cleaning, pest control and other support services sector experienced employment growth of 2800 jobs, while administrative services experienced a decline of 2600 jobs.

By 2015–16, Monash is forecasting that there will be 46 800 employed in the industry in Western Australia. This represents a growth in employment of 6400 jobs, which is the second highest growth in percentage terms (15.8%) of all sectors, indicating relatively strong employment prospects for this industry for the next four years.
In 2011–12, the public administration and safety industry employed 73 000 persons or 5.8% of all persons employed in Western Australia. This industry consists of three sectors: public administration; defence; and public order, safety and regulatory services.

Over the four years to 2011–12, employment levels in this industry have been variable, but have increased overall by 9200 persons.
The Western Australian State government is the main employer of public servants in the State, typically accounting for around 82% of total public sector employment in 2011–12, with the local government sector accounting for 12% and the Commonwealth Government around 6%. While the majority of jobs in this industry are within the public sector, some of the public order/safety services positions are from the private sector (for example, armoured car services, locksmith services, security guard services and similar).

By 2015–16, Monash is forecasting employment levels in public administration and safety to increase gradually to 78 100 jobs, representing an increase of 5100 new jobs over the period. This equates to growth of 6.9% over the four years. The moderate growth trajectory is consistent with the State Government’s commitment to maintaining a ceiling on full time equivalent (FTE) positions.

**Education and training**

In 2011–12, the education and training industry employed 92 200 persons or 7.3% of all persons employed in the State, making it the sixth largest employer in the State. This industry is divided into three sectors: preschool and school education; tertiary education; and adult community and other education.

![Education and training](image)

Source: Monash, December 2011 and ABS Cat. 6291.0 (year average levels shown)

Employment in this industry is influenced by a number of factors including the number of school age children in the population, school retention rates,

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government policy, average class size and developments in private school education, including specialist schools\textsuperscript{16}.

Over the period 2007–08 to 2011–12, employment in the education and training industry rose by 6100 persons or 7.1%. The largest employment growth was in the adult, community and other education sector (5800 jobs), with strong demand for post school level training through both the vocational education training and higher education sectors. The majority of employment in the industry is for the preschool and school education sector. Employment change in this area has fluctuated over the last four years and overall employment numbers remain similar to the level recorded four years ago.

By 2015–16, Monash forecasts show employment levels growing by 11 700 persons, with increases in employment levels in all sectors. This reflects the strong population growth that has been occurring in the State. The higher education sector may be moderated by a persistently high Australian dollar impacting the demand from international students.

**Healthcare and social assistance**

In 2011–12, the healthcare and social assistance industry employed 138 600 persons or 11.0% of the persons employed in the State, making it the largest employer in Western Australia. This industry consists of four sectors: hospitals; medical and other health care services; residential care services; and social assistance services.

![Chart of Healthcare and Social Assistance Employment](chart)

Source: Monash, December 2011 and ABS Cat. 6291.0 (year average levels shown)

Over the four years to 2011–12, the health care and social assistance industry grew strongly by 26 000 jobs or 23.1%. Most of the jobs growth occurred in medical and other health care services; social assistance services and

\textsuperscript{16} Source: DEEWR (2010), Employment outlook for Education and Training
residential care services sectors. Some of the growth can be attributed to an increase in assistance services for aged and disabled care.

Employment in the health care and social assistance industry is influenced by many factors such as the ageing of the population, the demand for new and improved health services, technological changes, government budget pressures, the growth of community and home based services and the continuing growth in demand for child care services\textsuperscript{17}. The Western Australian Government has invested in building health infrastructure, spearheaded by the Fiona Stanley Hospital in Murdoch and a new Children's Hospital in Nedlands. These projects and others are likely to increase the demand for hospital staff in the coming years.

By 2015–16, Monash is forecasting employment in this industry to increase by 19 300 persons, representing growth of 13.9%. Not only is this one of the strongest forecast growth rate of all industries, given the current large size of the sector, the 19 300 additional jobs forecast represents the second highest growth in absolute level terms.

**Arts and recreation services**

In 2011–12, the arts and recreation services industry employed 21 200 persons or 1.7% of persons employed in the State. This industry is divided into four sectors: heritage activities; creative and performing arts activities; sports and recreation activities; and gambling activities.

![Bar chart showing employment in arts and recreation services from 2007-08 to 2015-16](chart.png)

Source: Monash, December 2011 and ABS Cat. 6291.0 (year average levels shown)

Between 2007–08 and 2011–12, the level of employment in arts and recreation services fluctuated quite significantly, but in aggregate declined by

\textsuperscript{17} Source: DEEWR (2010), Employment outlook for healthcare and social assistance
400 or 1.8% over the period. The only area of the industry to grown is sports and recreation services, where most demand is from the local market.

By 2015–16, employment in this industry is expected to increase by 1200 persons to a level of 22 400 jobs.

**Other services**

In 2011–12, the other services industry employed 53 000 persons or 4.2% of persons employed in the State. This industry consists of three sectors: repair and maintenance; personal and other services; and private households employing staff and undifferentiated goods and service producing activities of households for own use.

Over the four years to 2011–12, employment within this industry grew by 5200 or 11.0% in total. The largest employment growth was in the repair and maintenance sector (3200 jobs) and personal and other services (2000 jobs). Demand for employment in these industries can be linked to population growth. Some of this demand is also from the resources sector that requires skilled workers from these areas such as motor mechanic and machinery service personnel.

By 2015–16, employment in this industry is forecast to increase to 58 500 jobs, corresponding to total growth of 5600 additional jobs. The personal and other services sector (such as hairdressing and beauty services, funeral and cemetery services and laundry and dry cleaning services) is projected to grow by 2700 jobs, while the repair and maintenance sector such as automotive repair and maintenance and machinery and equipment repair and maintenance is expected to increase by 2800 jobs.

Source: Monash, December 2011 and ABS Cat. 6291.0 (year average levels shown)
Occupational employment growth

The graph below shows a comparison of employment growth across the main occupational divisions in Western Australia for the period 2007–08 to 2011–12 (using historical ABS data) and 2011–12 to 2015–16 (using forecast employment data produced by the Centre of Policy Studies at Monash University – December 2011).

Source: Monash, December 2011 and ABS Cat. 6291.0
Note: Figures are rounded to the nearest 100.
* Occupation is classified according to the Australian and New Zealand Standard Classification of Occupations (ANZSCO) 2006.

Generally, employment prospects are dependent on a number of factors including the general economic environment, opportunities within industries and occupations, and the level of employment demand for specific skills.

Between 2007–08 and 2011–12, technicians and trades workers experienced the highest increase in the number of new jobs at 23 500. This was followed by machinery operators and drivers with 22 700 new jobs, and community and personal service workers at 22 400.

By 2015–16, professionals; technicians and trades workers; and clerical and administrative workers are anticipated to collectively account for 61.4% of jobs growth in the State. Professional level occupations are anticipated to account for 28.4% of employment growth, followed by technicians and trade workers at 18.8% and clerical and administrative workers at 14.2%. Strong projections for employment growth to these already large occupation groups may be tied to expected continued strong demand from the mining and healthcare industries which employ many occupations from these higher skill levels.

Projected growth for lesser skilled occupation groups like sales workers, machinery operators and drivers and labourers is expected to remain small.
This indicates the importance of gaining skills via post school level education or training, either through a University or Vocational Education and Training system, to improve a persons employment opportunities within the Western Australian labour market.

The section below highlights the top ten jobs growth by specific occupation (at the four digit ANZSCO level of classification) for both the historical period and the forecast period.

**Top 10 jobs to 2011–12**
The top 10 occupations which experienced the greatest number of additional jobs growth in the four year period to 2011–12 (accounting for 43.2% of total growth) include:

- drillers, miners and shot firers (7400 additional jobs);
- general clerks (5700);
- metal fitters and machinists (5400);
- sales assistants (5300);
- electricians (5100);
- truck drivers (5000);
- other building and engineering technicians (4900);
- education aides (4700);
- crop farmers (4300); and
- structural steel and welding trades workers (3900).

**Top 10 jobs to 2015–16**
The top 10 occupations expected to grow by the greatest number of additional jobs in the four year period to 2015–16 (accounting for 20% of total growth) include:

- truck drivers (2900 additional jobs);
- education aids (2900);
- registered nurses (2500);
- accountants (2400);
- electricians (2200);
- receptionists (1900);
- general clerks (1800);
- other building and engineering technicians (1800);
- primary school teachers (1800); and
- carpenters and joiners (1800).

As can be seen by the list above, the growth in these occupations is relatively consistent with the strong industry growth expected in the construction and health care and social assistance.

For more information on occupations with good employment prospects, see Appendix B.
Employment growth by working arrangements

In line with national and international trends, the proportion of people working part time in Western Australia continues to rise. In the last 30 years, the proportion of people working part time increased from 18.2% to 28.3% currently. Consequently, the proportion of workers in full time jobs in the State declined from 81.8% in 1981–82 to 71.7% currently.

The graph below shows historical employment growth by occupation and part time and full time status.

Even so, about 67% of all jobs growth in the past four years was on a full time employment basis. Over 58% of full time jobs were in the occupational groups of managers; professionals; and technicians and trades workers. However, machinery operators and drivers captured the largest (over 25% or 22 700 jobs) part of growth in the full time sector in the last four years.

Part time jobs growth was particularly strong for community and personal service workers (16 800 jobs or 42.5% of all new part time jobs) and sales workers (9400).

Over the last four years, almost 90% of jobs growth for the sales workers and over 75% for community and personal service workers was on a part time basis, suggesting that these occupational groups tend to offer more flexibility in terms of working hours.

Furthermore, the only job losses that occurred in the past four years in Western Australia were full time positions for labourers (700 loss) and part time jobs for managers (2000 loss).
Employment growth by gender

The graph below shows historical employment growth by occupation and gender.

Employment growth by occupation and gender
2007–08 to 2011–12

Source: ABS Cat. 6291.0 (year average)
Note: Figures are rounded to the nearest 100

In the four year period to 2011–12, male employment growth accounted for 57.8% (69 200 jobs) of total jobs growth.

Male employment growth was the strongest in the machinery operators and drivers; technicians and trades workers; and managers occupational groupings. On the other hand, females experienced the strongest growth in the community and personal service workers; and professionals categories.

Machinery operators and drivers; and technicians and trades workers positions are still dominated by males with employment growth of 21 000 and 20 800 jobs respectively.

Interestingly, employment growth in the professional occupational group was much stronger for females (10 600 jobs) compared to males (3700). Females in the community and personal service workers category also experienced strong employment growth at 16 700 new jobs.
Employment growth by highest qualification attainment level

The graph below illustrates employment growth by highest qualification attainment levels in Western Australia for the period 2007–08 to 2011–12 (historical) and 2011–12 to 2015–16 (forecast), produced by Monash University (December 2011).

Source: Monash, December 2011
Note: Figures are rounded to the nearest 100.

Between 2007–08 and 2011–12, the largest increase in employment was for persons holding a certificate III or IV (64 100 jobs or 52.5% of total employment increase). Persons without post school qualifications experienced the second largest increase in employment (32 600 jobs).

For the four year period out to 2015–16, the largest employment growth is expected for individuals holding a certificate III or IV qualification (36 300 jobs), followed by those with a bachelor degree (35 000 jobs).

In contrast, individuals without post school qualifications are projected to experience a decline in employment of 6300 jobs in comparison to the growth of 32 600 jobs in the historical period to 2011–12. This projected decline in employment is likely to be a reflection of industry’s increased demand for skills and qualifications, particularly given the high level of qualifications typically required for most of the key growth occupations listed on the previous page.
References

Australian Bureau of Statistics, complete citations of catalogues used are detailed in document footnotes


Deloitte Access Economics, September 2012, *Investment Monitor*


Western Australian Department of State Development, *WA Economic Profile, December 2012*, viewed January 2013, dsd.wa.gov.au

Western Australian Department of Treasury, May 2012, 2012–13 *Budget Paper No. 3*

Western Australian Department of Treasury, December 2012, 2012–13 *Government Mid-year Projections Statement*
Appendix A: Labour market data, forecasts and uncertainty

The labour market forecasts referred to in this document are primarily taken from the results of Monash model, developed by the Centre of Policy Studies at Monash University. These forecasts are conducted within an economy-wide framework, which integrates:

- a macro model (which determines aggregate employment);
- an applied general equilibrium model (called ‘Monash’\(^{18}\), which determines employment by industry); and
- a labour market extension (which determines employment by occupation).

In respect to this system of labour market modelling, the Centre of Policy Studies at Monash University cautions that:

So far the development of the system has focused primarily on the demand for labour. A particular concern has been the effect in recent years of technological and social change on the structure of the economy and the implications for future labour demand. A complementary supply side forecasting system is currently in preparation.

In addition, the current dynamic economic environment makes it very difficult for any forecasting model to predict in detail specific movements in employment growth, particularly in the medium or longer term, as there are many uncertainties to be considered.

As an example, notwithstanding the forecast fall in employment levels in the State’s agriculture, forestry and fishing industry (presented above), employment in the industry could instead remain at current levels or possibly even grow if the industry experiences very favourable outcomes (for example, the Australian dollar falls; global food prices remain high; the State experiences ideal weather for growing conditions in coming years; and the industry is successful in retaining/gaining labour when in competition with the resources sector).

While the forecasts referenced in this paper have been compiled with due care and diligence, forecasts can differ due to differences in factors like data sources used; models and modelling techniques used; underlying assumptions; and many others. Also, the frequently changing level of expected resource sector investment and demand for labour in a State like Western Australia means employment forecasts can date very quickly.

Due care should therefore be exercised when interpreting forecast movements (particularly in respect to the detailed employment forecasts). The forecasts should be treated as indicative picture of what the State’s future labour market may look like given expected growth trajectories (and on an assumption that the key downside risks to the State’s economic growth do not eventuate).

\(^{18}\) Monash is a detailed dynamic applied general equilibrium model of the Australian economy, which identifies 112 industries in 56 regions. For more detailed technical information, see: http://www.monash.edu.au/policy/elecpappr/ip-76.htm
Unless otherwise stated, historical employment data in this paper are based on the monthly Labour Force survey conducted by the Australian Bureau of Statistics (ABS). This survey is based on a sample of private dwellings (houses, flats, apartments, etc) and non-private dwellings (hotels, motels, institutions, etc), and covers the civilian population\textsuperscript{19} aged 15 years and over. The sample size the ABS uses translates to a coverage of about 1 in 315 persons (0.32%) of the civilian population aged 15 years and over in Australia, with a somewhat higher coverage of approximately 1 in 246 persons (or 0.41%) in Western Australia. The survey results are then extrapolated up to independent estimates of the civilian population aged 15 years and over.

All data presented in this publication are derived from original estimates, smoothed using a 12 month average system where possible. In the case topics where data is released quarterly, such as employment by Industry, original figures are averaged over the previous four quarters. This method ensures the final data point of all topics in this paper is an average across the 2011–12 financial year.

Please note, this method of smoothing the original estimates is different to how labour force data is published by the ABS, which provides seasonally adjusted and trended data for most labour force survey topics. This may lead to small discrepancies when comparing this publication and ABS released materials.

For further information regarding the ABS Labour Force Survey and Statistics, please visit the ABS website.

**Further note on annual averages**

‘Annual average’ growth rates compare the most recent four quarters (one year’s worth) of data against the corresponding four quarters worth of data from a year ago.

As the measure therefore incorporates eight quarterly observations, it reduces the level of volatility that arises with the two observations that get incorporated into a ‘through the year’ growth measure (for instance, a single data observation from one month, relative to that same month a year ago).

However, notwithstanding that annual averages reduce the month to month or quarter to quarter volatility typically associated with a ‘through the year’ (or monthly/quarterly) measure, they are usually not the best measure for picking turning points in data.

\textsuperscript{19} This means the survey excludes members of the permanent defence forces, certain diplomatic personnel of overseas governments customarily excluded from census and estimated population counts, overseas residents in Australia, and members of non-Australian defence forces (and their dependants) stationed in Australia.
### Appendix B: List of occupations with projected good employment growth for the period 2011–12 to 2015–16 in WA

<table>
<thead>
<tr>
<th>ANZSCO code</th>
<th>ANZSCO name</th>
</tr>
</thead>
<tbody>
<tr>
<td>7331</td>
<td>Truck drivers</td>
</tr>
<tr>
<td>4221</td>
<td>Education aides</td>
</tr>
<tr>
<td>2544</td>
<td>Registered nurses</td>
</tr>
<tr>
<td>2211</td>
<td>Accountants</td>
</tr>
<tr>
<td>3411</td>
<td>Electricians</td>
</tr>
<tr>
<td>5421</td>
<td>Receptionists</td>
</tr>
<tr>
<td>5311</td>
<td>General clerks</td>
</tr>
<tr>
<td>3129</td>
<td>Other building and engineering technicians</td>
</tr>
<tr>
<td>2412</td>
<td>Primary school teachers</td>
</tr>
<tr>
<td>3312</td>
<td>Carpenters and joiners</td>
</tr>
<tr>
<td>4231</td>
<td>Aged and disabled carers</td>
</tr>
<tr>
<td>3341</td>
<td>Plumbers</td>
</tr>
<tr>
<td>8112</td>
<td>Commercial cleaners</td>
</tr>
<tr>
<td>5111</td>
<td>Contract, program and project administrators</td>
</tr>
<tr>
<td>5121</td>
<td>Office managers</td>
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<tr>
<td>2414</td>
<td>Secondary school teachers</td>
</tr>
<tr>
<td>5511</td>
<td>Accounting clerks</td>
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<tr>
<td>1311</td>
<td>Advertising and sales managers</td>
</tr>
<tr>
<td>5512</td>
<td>Bookkeepers</td>
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<tr>
<td>7122</td>
<td>Drillers, miners and shot firers</td>
</tr>
<tr>
<td>3513</td>
<td>Chefs</td>
</tr>
<tr>
<td>4233</td>
<td>Nursing support and personal care workers</td>
</tr>
<tr>
<td>1331</td>
<td>Construction managers</td>
</tr>
<tr>
<td>4117</td>
<td>Welfare support workers</td>
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<tr>
<td>7411</td>
<td>Storepersons</td>
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<tr>
<td>2613</td>
<td>Software and applications programmers</td>
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<tr>
<td>6211</td>
<td>Sales assistants (general)</td>
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<td>2713</td>
<td>Solicitors</td>
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<td>3622</td>
<td>Gardeners</td>
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<tr>
<td>1323</td>
<td>Human resource managers</td>
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<td>2513</td>
<td>Occupational and environmental health professionals</td>
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<tr>
<td>5212</td>
<td>Secretaries</td>
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<td>7311</td>
<td>Automobile drivers</td>
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<td>1421</td>
<td>Retail managers</td>
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<tr>
<td>8999</td>
<td>Other miscellaneous labourers</td>
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<tr>
<td>2336</td>
<td>Mining engineers</td>
</tr>
<tr>
<td>2231</td>
<td>Human resource professionals</td>
</tr>
<tr>
<td>2324</td>
<td>Graphic and web designers, and illustrators</td>
</tr>
<tr>
<td>1112</td>
<td>General managers</td>
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<tr>
<td>3223</td>
<td>Structural steel and welding trades workers</td>
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<td>8211</td>
<td>Building and plumbing labourers</td>
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<td>2723</td>
<td>Psychologists</td>
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<td>7213</td>
<td>Forklift drivers</td>
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<td>2332</td>
<td>Civil engineering professionals</td>
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<td>5911</td>
<td>Purchasing and supply logistics clerks</td>
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<td>3121</td>
<td>Architectural, building and surveying technicians</td>
</tr>
<tr>
<td>8219</td>
<td>Other construction and mining labourers</td>
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