

**THE DEPARTMENT OF TRAINING
AND WORKFORCE DEVELOPMENT**

**Western Australian employment trends and prospects
September 2011**



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Contents

Purpose	2
Summary	2
Outlook	3
Employment growth by industry sector 2006–07 to 2014–15	6
Agriculture, forestry and fishing	6
Mining	7
Manufacturing	8
Electricity, gas, water and waste services	9
Construction	10
Wholesale trade	11
Retail trade	12
Accommodation and food services	13
Transport, postal and warehousing	13
Information media and telecommunications	15
Financial and insurance services	16
Rental, hiring and real estate services	16
Professional, scientific and technical services	17
Administrative and support services	18
Public administration and safety	19
Education and training	20
Healthcare and social assistance	21
Arts and recreation services	22
Other services	23
Occupational employment growth	25
Employment growth by highest qualification attainment level	27
Initiatives to address skill shortages	28
References:	30
Appendix: Labour market data, forecasts and uncertainty	31

Purpose

The aim of this paper is to highlight employment trends of Western Australian industries in recent years, as well as their short to medium term prospects, based on modelling provided by Monash University¹.

Employment growth is analysed on two separate four year timeframes, examining the historical period between 2006–07 and 2010–11 (based on Australian Bureau of Statistics data), and the forecast period between 2010–11 and 2014–15 (using the Australian Bureau of Statistics data as the base and extrapolating forward using the Monash growth projections).

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

Summary

According to the Australian Bureau of Statistics (ABS), 1.24 million people were employed in Western Australia at the end of 2010–11 – some 10.8% of the national total.

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

Even so, demand for labour in the State is strongly associated with the resources sector. While the 86,400 people directly employed in the State's mining industry means it currently ranks as Western Australia's 7th largest employer, the industry also has important flow on effects to other industries, creating additional jobs throughout the economy.

The resources boom of 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 employment growth in the State for the four years to 2010–11 was led by the mining industry (34 500 additional jobs). This was followed by the construction industry (22 500 additional jobs) due in part to the labour requirement arising from the construction phases of resource projects. However, not all growth was resource-related, with the third highest growth coming from education and training (17 000 additional jobs). These three industries accounted for 57% of all jobs growth during the period.

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 June 2011). It should be noted that there is a certain degree of uncertainty attached to any forecast — see Appendix for more information.

During the same four year period, a few industries recorded declining employment levels, most notably manufacturing (7 800 less jobs).

On an occupational basis, strong employment growth over the four years to 2010–11 was recorded for professionals (35 000 persons), technicians and trades workers (34 100 persons), and managers (21 100). On a qualification basis², the biggest increases in employment levels were persons with no post-school qualifications (50 700 persons), persons with certificate III or IV training (42 600 persons) and those with bachelor degree (30 400). Job levels for persons with certificate I or II fell by 21 400.

Outlook

The Western Australian economy came out of the global economic downturn in relatively sound shape. While some sectors are still experiencing patchy conditions, the State's economy is continuing on a broad recovery trajectory. Activity associated with Western Australia's current pipeline of major resource sector projects is expected to have important flow on effects for the State's economy over coming years, including a sustained increase in labour demand.

According to the Monash projections for the four years to 2014–15, the largest growth in employment levels is expected to occur in health care and social assistance (24 400 jobs, at an annual average growth rate of 4.8%), education and training (13 200 jobs, at 3.3% annual average growth) and transport, postal and warehousing (12 000 jobs at 4.9%). Together, these three industries are projected to account for almost 43.3% 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 (11 100 less jobs)³ and the arts and recreation services industry (900 less jobs).

Over the forecast period, the three occupational groupings expected to experience the strongest increases in employment growth are professionals (37 400), clerical and administrative workers (18 200), and community and personal service managers (19 800). Together, these groups are predicted to account for 59.9% of jobs growth in the next four years.

In the four years to 2014–15, persons with the following qualifications are expected to lead future jobs growth: bachelor degree (38 400); certificate III or IV (30 600); and diploma (22 200). Collectively, these three qualifications are expected to account for 79.5% of the State's total employment growth.

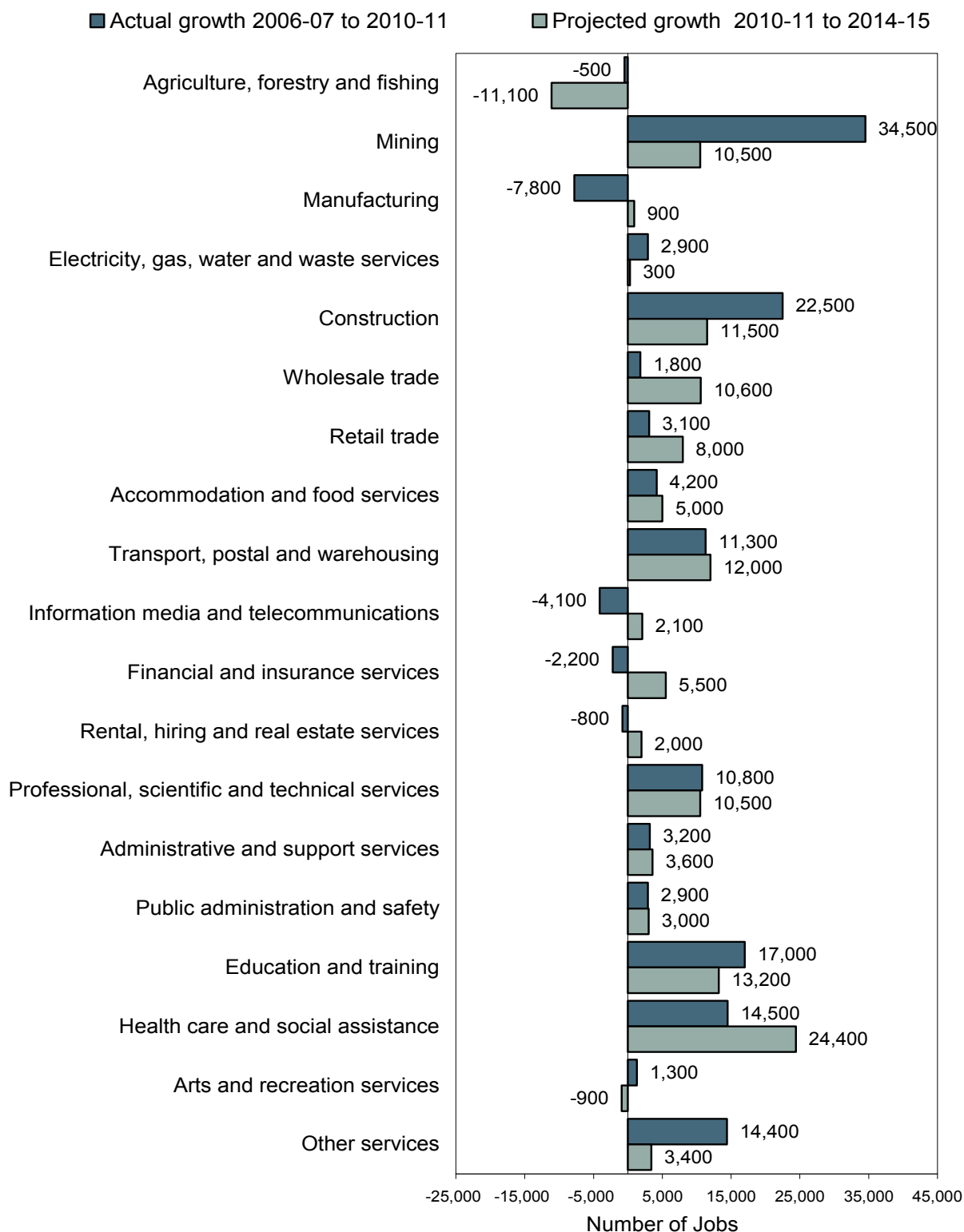
² Historical data for qualifications employment in this paper are based on the back-cast results provided from the Monash model, as detailed comparable data from the ABS is not available.

³ While the sharp falls expected for agriculture, forestry and fishing employment levels for Western Australia are sizable, these appear to be based in the main on Monash's CGE model input assumptions from Deloitte Access Economics' March quarter 2011 *Business Outlook* (which had farm sector employment across Australia falling over the next four years, based on food prices dropping back to more 'normal' levels, along with falls in farm output as well). Also see Appendix for some key cautions about forecast results.

Further detail in relation to growth profiles specific to industries, occupations and qualifications is contained in the following sections of this document. It is important to note however that the forecasts in this document should be viewed as indicative only – see the Appendix for more information.

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).

Western Australia employment growth by industry* 2006-07 to 2014-15



Source: Monash June 2011 and ABS Cat. 6291.0

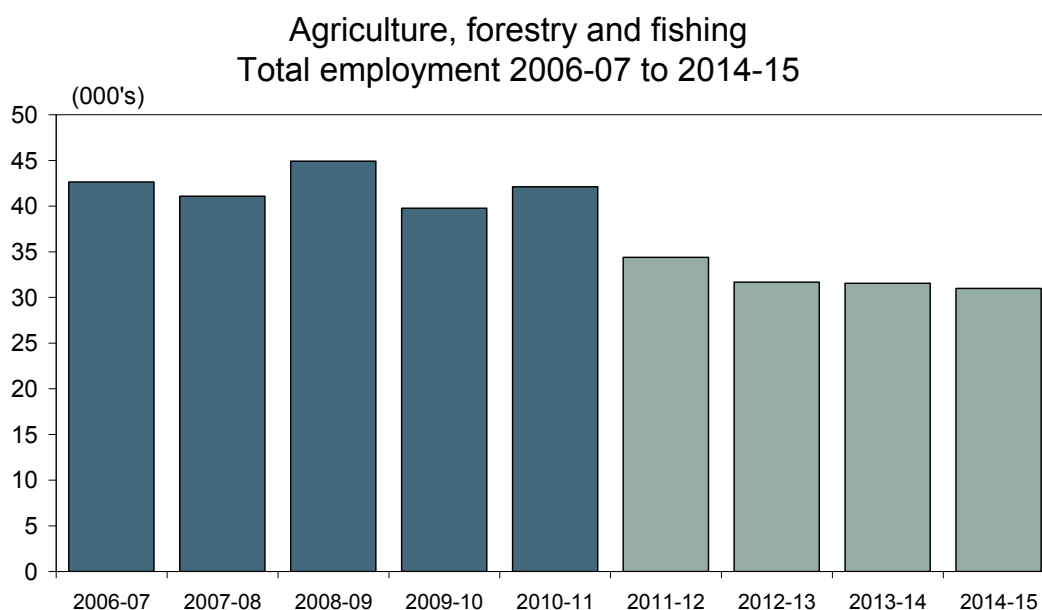
Note: Figures are rounded to the nearest 100.

*Industry is classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC) 2006.

Employment growth by industry sector 2006–07 to 2014–15⁴

Agriculture, forestry and fishing

In 2010–11, average employment in the agriculture, forestry and fishing industry was around 42 100 persons, or 3.4% 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.



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

Over the four year period to 2010–11, this industry experienced a significant downward trend in employment, losing 500 jobs (although employment levels have proved quite volatile over the past few years — see dark bars in the chart above). The decline was mainly associated with ongoing drought conditions across most of the State’s Wheatbelt region.

By 2014–15, Monash forecasts show that there will be 31 000 Western Australians working in this industry. This represents a decline in employment of around 11 100 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 competition for labour from the resources sector.

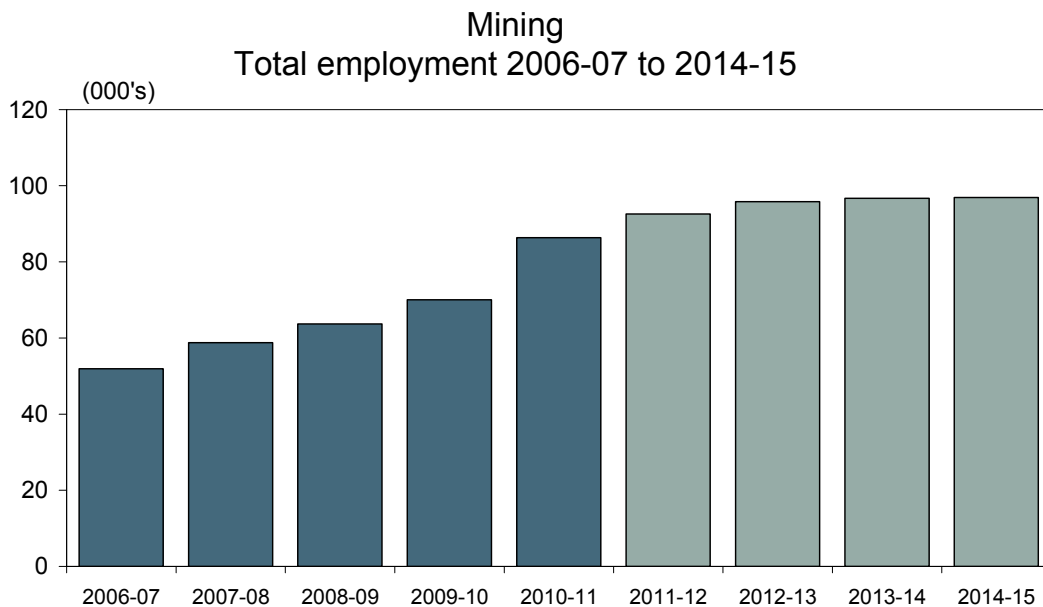
Also see Appendix for further information in relation to the forecasts above.

⁴ 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).

Mining

Western Australia's economy has a very significant mining and resources sector, largely driven by extraction, processing and exporting of a diverse range of mineral and petroleum commodities. Today the resources sector covers oil, gas and minerals such as iron ore, coal, uranium, nickel, bauxite, gold, lead, copper, zinc, mineral sands and diamonds.

In 2010–11, the mining industry⁵ in the State employed 86 400 persons (7.1% 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; exploration and other mining support services. Although mining's contribution to Gross State Product (GSP) is the highest of all industries (27.3 % of GSP in 2009–10)⁶ it only ranks as the seventh largest employer due to its capital intensive nature.



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

Over the four year period to 2010–11, this industry experienced significant growth in employment, gaining 34 500 jobs. This represents 66.4%, the strongest employment growth of all industries in percentage terms in the four year period to 2010–11. The biggest increase was in the metal ore mining industry, adding 26 400 jobs.

⁵ Major resource related processing industries include conversion of bauxite into alumina and then aluminium, 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).

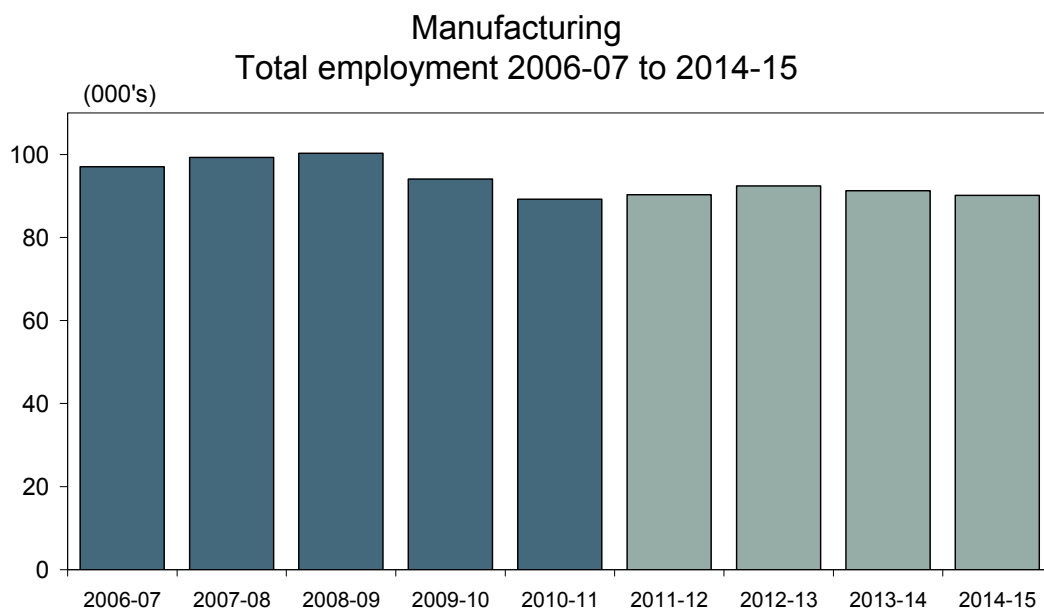
⁴ Source: ABS Cat. 5220.0, current prices

The mining industry has experienced exceptionally strong job growth in recent years, underpinned by the continued rapid industrialisation of China and other fast growing Asian economies. Employment growth in the mining industry reflects the many new and expanded resource sector projects that have commenced operations in the State over recent years. These expansions have come about in part due to increased demand and price rises over the mid to late 2000s for most base metals, especially iron ore.

In the four year forecast period to 2014–15, Monash is predicting that there will be 96 900 Western Australians working in this industry. This represents an increase in employment of 10 500 jobs. According to Deloitte Access Economics' *Investment Monitor*, around \$85 billion worth of mining projects were either committed to or under construction in the State as at June 2011. Correspondingly, the operational phases of these projects, once completed, will help boost employment levels in the industry.

Manufacturing

In 2010–11, the manufacturing industry employed 89 200 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.



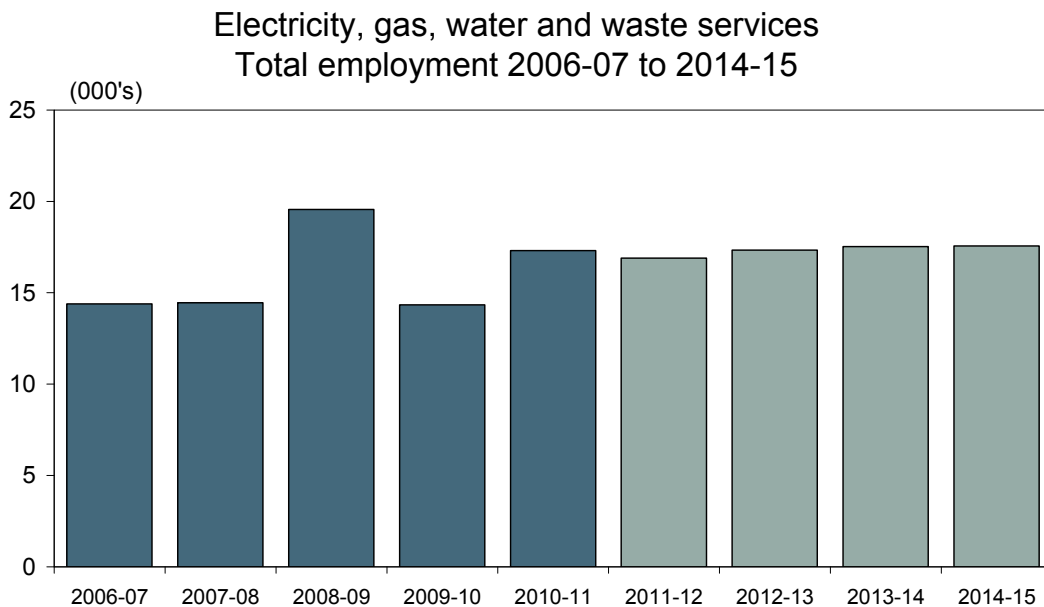
Source: Monash, June 2011 and ABS Cat. 6291.0 (year average levels shown)

Over the four years to 2010–11, manufacturing employment in the State fell by 7 800 jobs (down 8.1%). This was by far the biggest decline in employment recorded by any industry in the State during this period. The sectors which experienced the largest declines were transport equipment manufacturing (2 500 jobs) and polymer product and rubber product manufacturing (2 000 jobs).

By 2014–15, Monash predicts that there will be 90 200 employed in the State’s manufacturing industry, representing a rise in employment of 900 jobs. Notwithstanding this growth, parts of the manufacturing industry are expected to experience 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 2010–11, the electricity, gas, water and waste services industry employed 17 300 persons (1.4% 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.



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

Over the four year period to 2010–11, the utilities industry in Western Australia grew by 2 900 jobs or 20.3%. A significant proportion of these jobs came from electricity supply (2 300 jobs) and water supply, sewerage and drainage services sectors of the industry (800 jobs) which mainly related to dam and desalination plant operations (a trend that may continue into the medium term to longer term if further desalination plants for Western Australia are needed).

By 2014–15, Monash is predicting that there will be 17 600 Western Australians working in this industry, an overall increase of 300 jobs. Employment growth is predicted for the electricity supply sector in particular.

According to Deloitte Access Economics *Investment Monitor* June 2011, there were a number of major utility infrastructure projects underway in the State, including the Southern Seawater desalination plant near Bunbury, 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.

Construction

In 2010–11, the construction industry employed 133 500 persons or 10.9% of persons employed in Western Australia, making it the State’s largest employer. The construction industry is divided into: building construction; heavy and civil engineering construction; and construction services.



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

Over the four year period to 2010–11, the construction industry in Western Australia grew by 22 500 jobs or 20.2%, the second highest jobs growth in level terms of all industries in this period. Over half of these jobs were in the construction services sector, including roofing, bricklaying, carpentry and plumbing services. During the State’s mining boom over the mid to late 2000s, house prices rose sharply, stimulating investment in additional supply. The mining boom itself resulted in a sizable construction program (mainly in civil and heavy engineering).

By 2014–15, Monash is forecasting that there will be 145 100 Western Australians employed in this industry, retaining its position as the State’s biggest employer. This represents an increase of 11 500 jobs, with most of this (almost 9 000) expected to occur in the construction services sector. Employment growth in this industry is underpinned by the strong demand for engineering construction related to the State’s robust resources sector.

In particular, the Gorgon Liquefied Natural Gas (LNG) project, an undertaking of Chevron, ExxonMobil and Shell worth \$43 billion, is expected to create some 3 500 jobs directly during its construction phase and up to 6 500 indirect jobs, most of them located on Barrow Island (just off the State's Pilbara coast). Direct and indirect employment is expected to peak at about 10 000 during construction, including indirect jobs for suppliers, contractors and service industries⁷.

Wholesale trade

In 2010–11, the wholesale trade industry employed 40 700 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 2010–11, the wholesale trade industry in Western Australia grew by 1 800 jobs or 4.6%. While most of the sectors in the industry recorded employment growth over this period, grocery, liquor and tobacco product wholesaling recorded a decline.



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

In the four year period to 2014–15, Monash is predicting that there will be 51 300 Western Australians employed in this industry. This represents an increase in employment of 10 600 jobs, with the machinery and equipment wholesaling industry expected to record relatively strong employment growth of 5 700 jobs.

⁷ *Resourcing the future*, National Resource Sector Employment Taskforce – Discussion Paper July 2010.

Retail trade

In 2010–11, the retail trade industry employed 127 200 persons, or 10.4% 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 spending⁸.



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

Over the four years to 2010–11, the retail trade industry in Western Australia grew by 3 100 jobs, or 2.5%. 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 2 400 jobs.

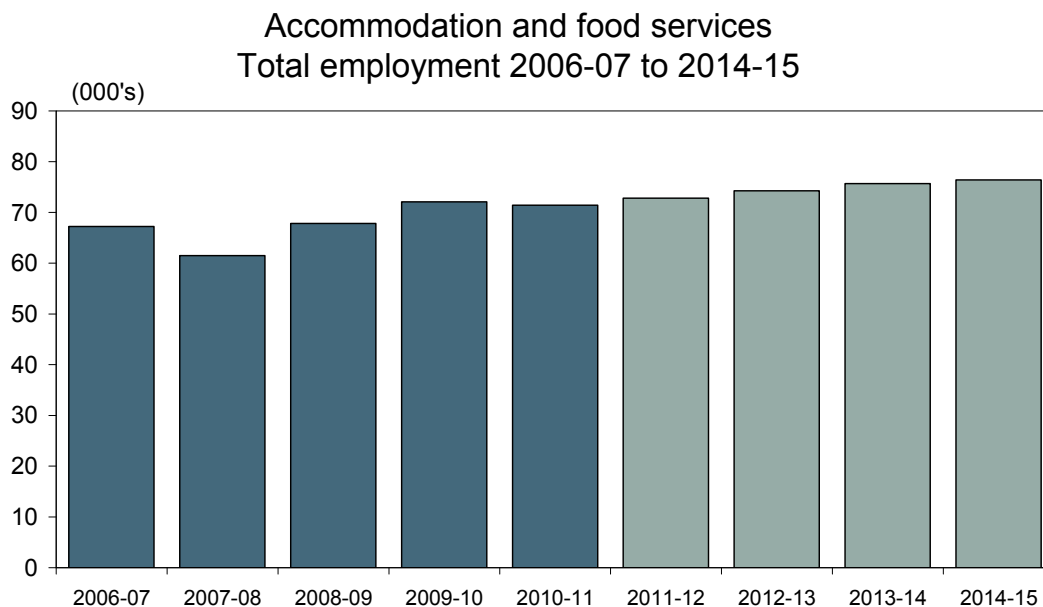
In the four year period to 2014–15, Monash is forecasting that there will be 135 200 Western Australians employed in this industry. This represents an increase in employment of 8 000 jobs, representing growth of 6.3%. Employment growth is expected across most retailing sectors.

However, the relatively flat employment growth outlook for retail initially (in 2011–12) is consistent with the notion that households are being conservative with their spending. The greater propensity for households to save / pay down debt, combined with higher interest rates and the withdrawal of Commonwealth Government stimulus measures, have resulted in weak retail conditions.

⁸ Retail trade industry profile, report commissioned by Australian Fair Pay Commission, 2009

Accommodation and food services

In 2010–11, the accommodation and food services industry employed 71 400 persons or 5.8% 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 workers⁹.



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

Over the four years to 2010–11, the accommodation and food services industry in Western Australia grew by 4 200 jobs, or 6.2%. All of this jobs growth came from the food and beverage services sector of the industry (this includes cafes, restaurants, food services and pubs).

By 2014–15, Monash predicts there will be 76 400 Western Australians employed in the industry, representing an increase in employment of 5 000. Most of the jobs growth is expected to come from the food and beverage services sector. However, the industry is also facing a number of short to medium term challenges, including the strong Australian dollar's effects on local tourism. In the short term, Western Australians may continue to save more rather than spending discretionary income in cafes and restaurants.

Transport, postal and warehousing

In 2010–11, the transport, postal and warehousing industry employed 57 200 persons or 4.7% 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.

⁹ Skills Australia, 2010. Industry Snapshots, Accommodation and Food Services.

Over the four years to 2010–11, the transport, postal and warehousing industry in Western Australia grew by 11 300 jobs (or 24.6%), with the transport support services sector (including stevedoring; airport operations and other air transport support; and customs agency services) experiencing particularly strong growth (up 6 400 jobs – nearly trebling in size).



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

The transport, postal and warehousing industry tends to be cyclical, and activity in the wider economy impacts on the industry performance as movements in both raw materials and consumer goods contract or expand.

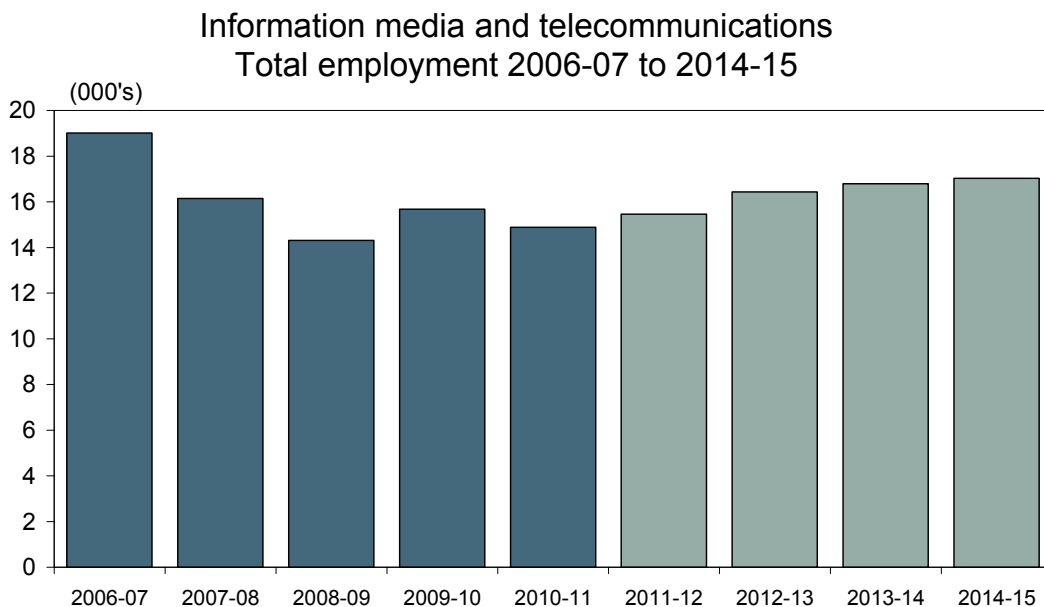
By 2014–15, Monash forecasts that there will be 69 300 Western Australians employed in this industry. This represents an increase in employment of 12 000 jobs, or 21.0% growth (while this is quite strong growth, it is worth noting it is off a low 2010–11 base¹⁰ – see chart above). Consistent with the development of major resource and infrastructure projects throughout the State, most of the jobs growth is expected in the road transport sector.

¹⁰ The Logistics Training Council has advised that based on research carried out by a variety of industry associations and other stakeholders, there appears to be some anomalies in reported data regarding industry of work. This might go some way to explain the apparent fall in employment in 2010-11. See also explanation about data quality issues in the Appendix.

Information media and telecommunications

In 2010–11, the information media and telecommunications industry employed 14 900 persons (1.2% 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 2010–11, employment in the information media and telecommunications industry in Western Australia declined by 4 100 persons (a fall of 21.7%). This is the second biggest decline in employment recorded by any industry in the State during this period. These job losses occurred in a number of sectors, with telecommunication services industry recording the biggest decline.



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

By 2014–15, Monash is predicting that there will be 17 000 Western Australians employed in this industry. This represents an increase in employment of 2 100 jobs, with the telecommunications services sector expected to grow by 1 200 jobs. In particular, the rollout of the National Broadband Network (NBN)¹¹ is expected to support employment levels.

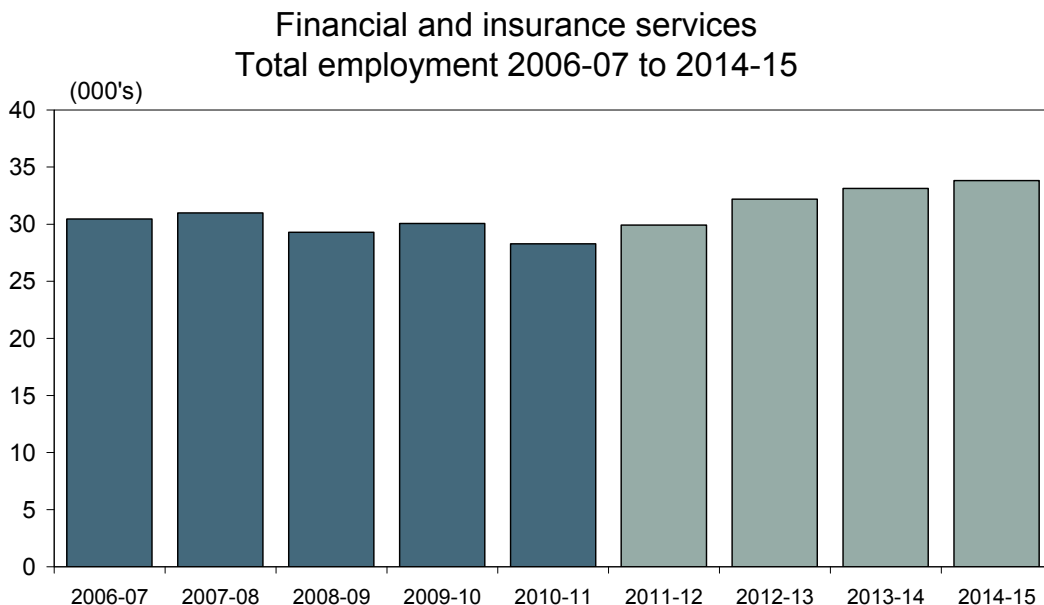
¹¹ According to the Department of Broadband, Communications and the Digital Economy, the NBN is an Australian Government initiative to deliver high speed broadband across Australia using a combination of technologies over coming years. The mainland rollout began with five first release sites in August 2010 with the first services connected in April 2011.

Financial and insurance services

In 2010–11, the financial and insurance services industry employed 28 300 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 2010–11, employment in the State’s financial and insurance services industry fell by 2 200 (down 1.7%). Banking, credit union and building society services (responsible for about 40% of employment in the industry) fell by 1 300 jobs. The only jobs growth over the period came from auxiliary finance and insurance services (100 jobs) and insurance and superannuation fund services (100 jobs).

By 2014–15, Monash forecasts that there will be 33 800 Western Australians employed in this industry. This represents an increase in employment of 5 500 jobs. The finance sector, including the banks and credit unions, is predicted to grow particularly strongly.



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

Rental, hiring and real estate services

In 2010–11, the rental, hiring and real estate services industry employed 21 800 persons or 1.8% 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.

Employment growth in this industry is usually driven by strong population growth as a result of increased migration levels into the State, and in response to strong levels of economic activity (especially in respect to the mining and construction industries).

Over the four years to 2010–11, employment in the rental, hiring and real estate services industry in Western Australia declined marginally (by 800 jobs, representing a 3.5% fall), with all of the job losses occurring in the property operators sector of the industry.

However, as can be seen in the following chart, employment levels grew in each of those years with the exception of the post-GFC economic downturn year of 2009–10, when employment in the industry dropped quite noticeably. In particular, large falls were recorded for property operators and real estate services (down 3 800 over the year). This corresponded with a very flat housing market in the State that year, following very strong growth in the few years prior.

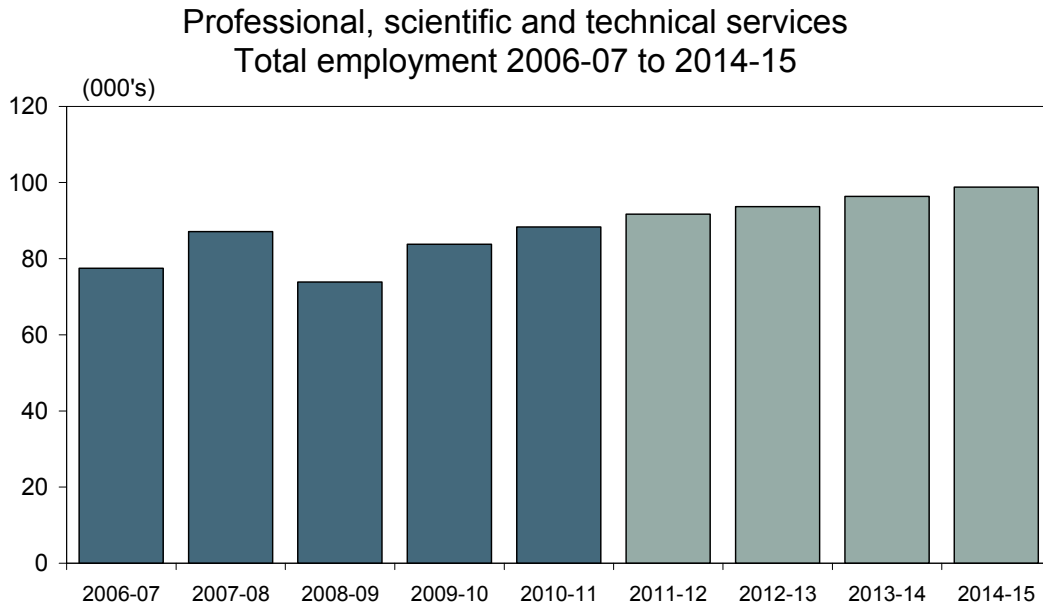
By 2014–15, Monash estimate that there will be 23 800 Western Australians working in the industry, an increase of 2 000 jobs (with growth coming from the real estate sector).



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

Professional, scientific and technical services

In 2010–11, the professional, scientific and technical services industry employed 88 300 persons or 7.2% 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.



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

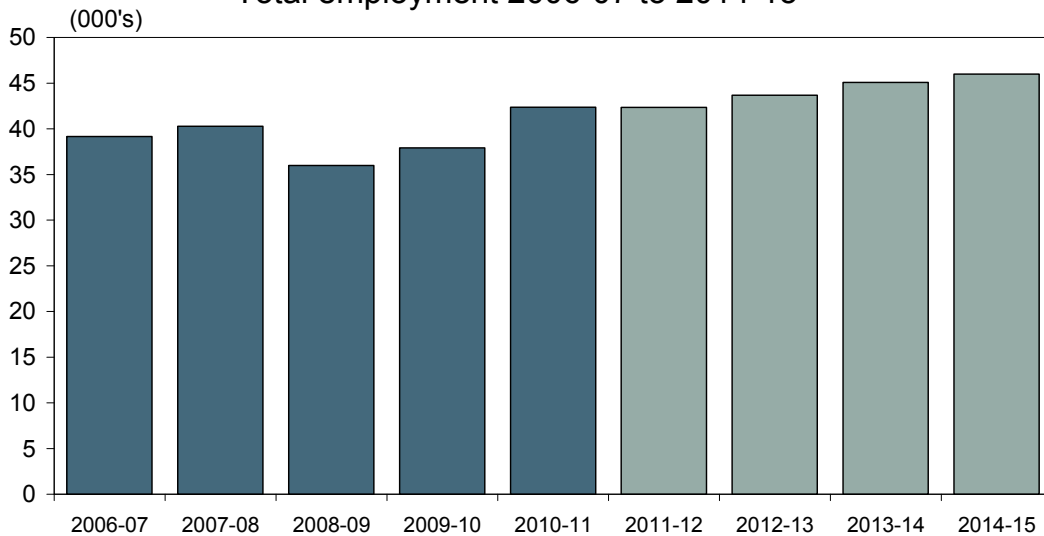
Over the four years to 2010–11, employment in the professional, scientific and technical services industry increased by 10 800 jobs or 14.0%. Strong growth took place in the professional, scientific and technical services sector (by 7 800). The professional, scientific and technical services industry in Western Australia includes a large number of high level skilled occupations such as architectural, engineering and technical services and legal and accounting services.

By 2014–15, Monash forecasts that 98 800 Western Australians will be employed in this industry, representing growth of 10 500 jobs. While the professional, scientific and technical services sector of the industry is expected to grow by 12 700 jobs, in contrast computer system design and related services is expected to have a decline of 2 200 jobs.

Administrative and support services

In 2010–11, the administrative and support services industry employed 42 400 persons or 3.5% of persons employed in the State. This industry is divided into two sectors: administrative services; and building cleaning, pest control and other support services.

Administrative and support services Total employment 2006-07 to 2014-15



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

Over the four years to 2010–11, employment in the administrative and support services industry increased by 3 200 people or 8.3%. Building cleaning, pest control and other support services sector experienced the largest employment growth (2 100 jobs).

By 2014–15, Monash is forecasting that there will be 46 000 employed in the industry in Western Australia. This represents a growth in employment of 3 600 jobs, similar to the previous four year period.

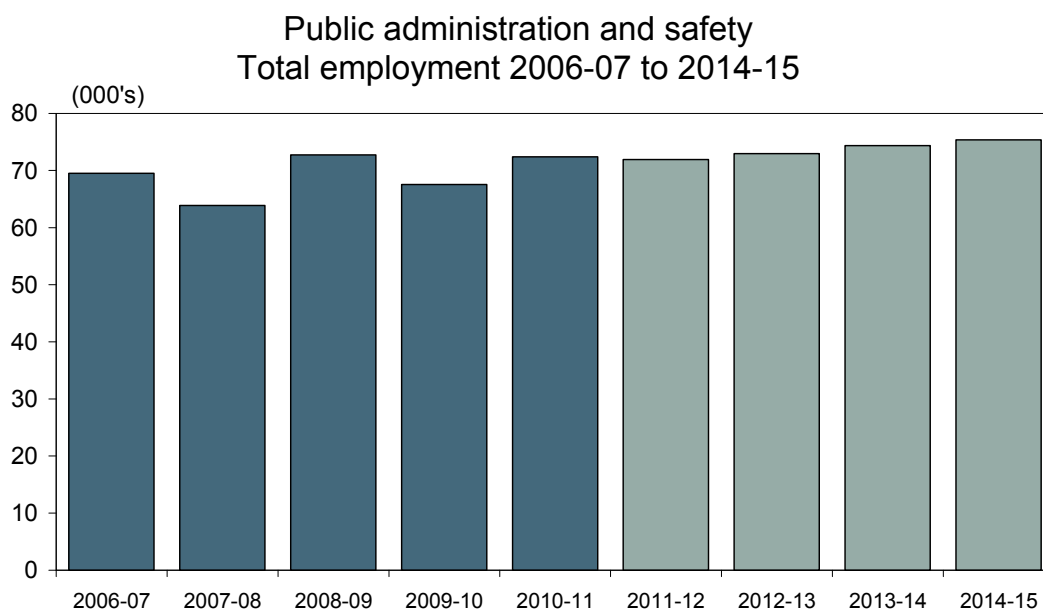
Public administration and safety

In 2010–11, the public administration and safety industry employed 72 400 persons or 5.9% of all persons employed in Western Australia. This industry consists of three sectors: public administration; defence; and public order, safety and regulatory services.

While the majority of jobs in this industry lie 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).

The Western Australian State government is the main employer of public servants in the State, typically accounting for around 83% of total public sector employment in recent years (with the local government sector accounting for around 10% and the Commonwealth Government around 7%)¹².

¹² Source: ABS catalogue number 6248.0.55.002 - *Employment and Earnings, Public Sector, Australia, 2009-10*.



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

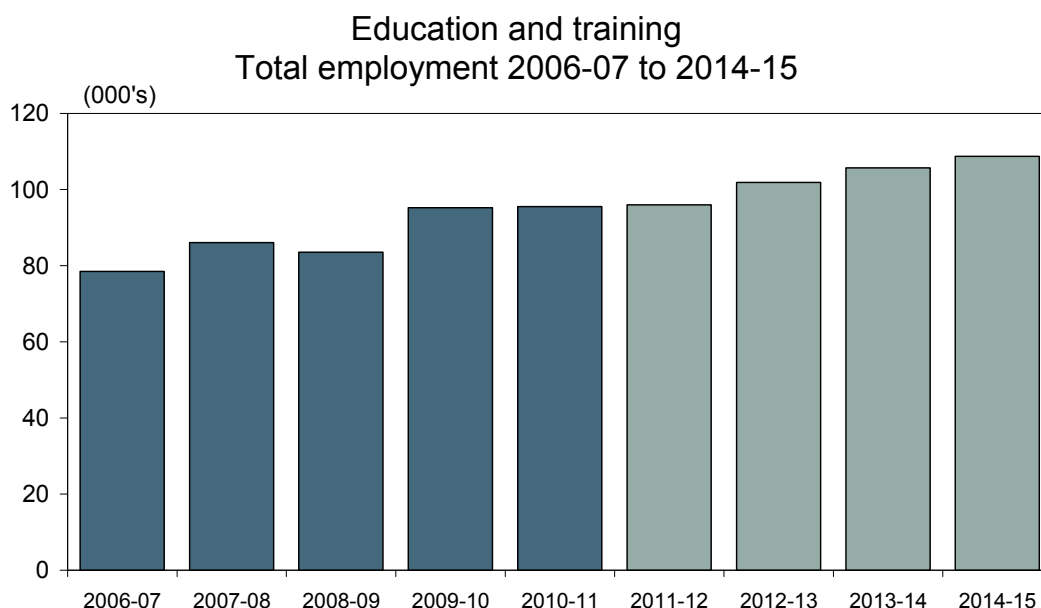
Over the four years to 2010–11, employment levels in this industry have been quite varied (see dark blue bars in the chart above), but have increased overall by 2 900 persons.

By 2014–15, Monash is forecasting employment levels in public administration and safety to increase gradually to 75 400 jobs, representing an increase of 3 000 new jobs over the period. This equates to growth of 4.1% over the four years. The moderate growth trajectory is consistent with the State Government’s commitment to maintain a ceiling on full time equivalent (FTE) positions¹³.

Education and training

In 2010–11, the education and training industry employed 95 500 persons or 7.8% of all persons employed in the State, making it the fourth largest employer in the State. This industry is divided into three sectors: preschool and school education (which accounts for around two thirds of employment); tertiary education; and adult, community and other education.

¹³ Source: “Cap on public sector workforce announced” Ministerial media statement by Troy Buswell, Minister for Transport; Housing Mon 02 February, 2009.



Source: Monash, June 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, government policy, average class size and developments in private school education, including specialist schools¹⁴.

Over the period 2006–07 to 2010–11, employment in the education and training industry rose by 17 000 persons or 21.7%. This was the third largest increase in the number of new jobs recorded by any industry in the State during this period. The largest employment growth was in the preschool and school education sector (10 800 jobs).

By 2014–15, Monash forecasts show employment levels growing by 13 200 persons, with increases in employment levels in both tertiary education and preschool and school education.

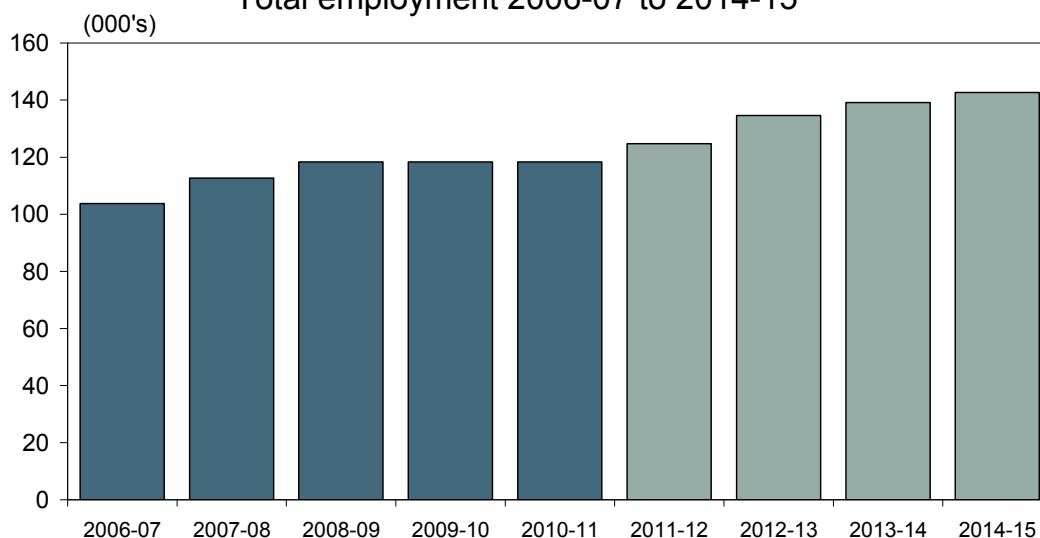
Notwithstanding its strong growth prospects, there is a risk that the tertiary education sector may face pressure in respect to full fee paying international students as a result of the high Australian dollar, greater levels of international competition and a tightening in Commonwealth Government visa requirements (in terms of the linkage between international students and skilled migration).

Healthcare and social assistance

In 2010–11, the healthcare and social assistance industry employed 118 300 persons or 9.7% of the persons employed in the State, making it the third 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.

¹⁴ Source: DEEWR (2010), Employment outlook for Education and Training

Healthcare and social assistance Total employment 2006-07 to 2014-15



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

Over the four years to 2010–11, the health care and social assistance industry grew by 14 500 jobs or 14.0%. Most of the jobs growth occurred in social assistance and medical and other health care services sectors.

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.¹⁵

By 2014–15, Monash is forecasting employment in this industry to increase by 24 400 persons, representing growth of 20.6%. Not only is this one of the strongest forecast growth rate of all industries, given the current large size of the sector, the 24 400 additional jobs forecast represents the highest growth in absolute level terms.

Consistent with the ageing profile of the State’s (and nation’s) population, around 1 300 of the jobs growth are projected to be in residential care services, with a further 7 700 new jobs forecast to come from the hospital sector.

Arts and recreation services

In 2010–11, 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.

¹⁵ Source: DEEWR (2010), Employment outlook for healthcare and social assistance



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

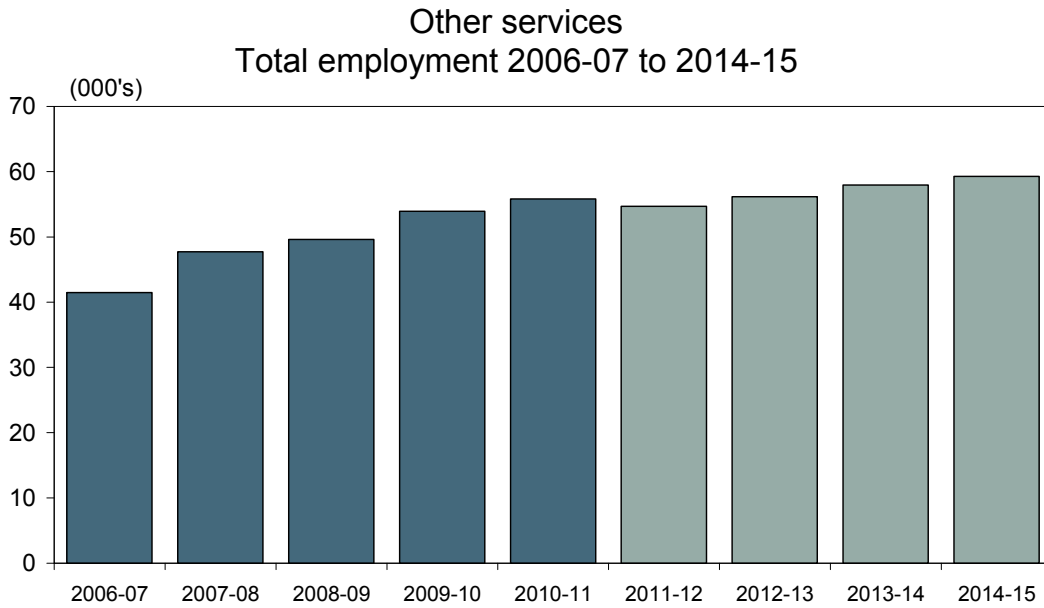
Between 2006–07 and 2010–11, the level of employment in arts and recreation services fluctuated quite significantly (see chart above), but in aggregate increased by 1 300 or 6.7% over the period.

By 2014–15, employment in this industry is expected to decline marginally (down 900 persons) to a level of 20 300 jobs.

Other services

In 2010–11, the other services industry employed 55 800 persons or 4.6% 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 2010–11, employment within this industry grew by 34.6% in total. The largest employment growth was in the repair and maintenance sector.

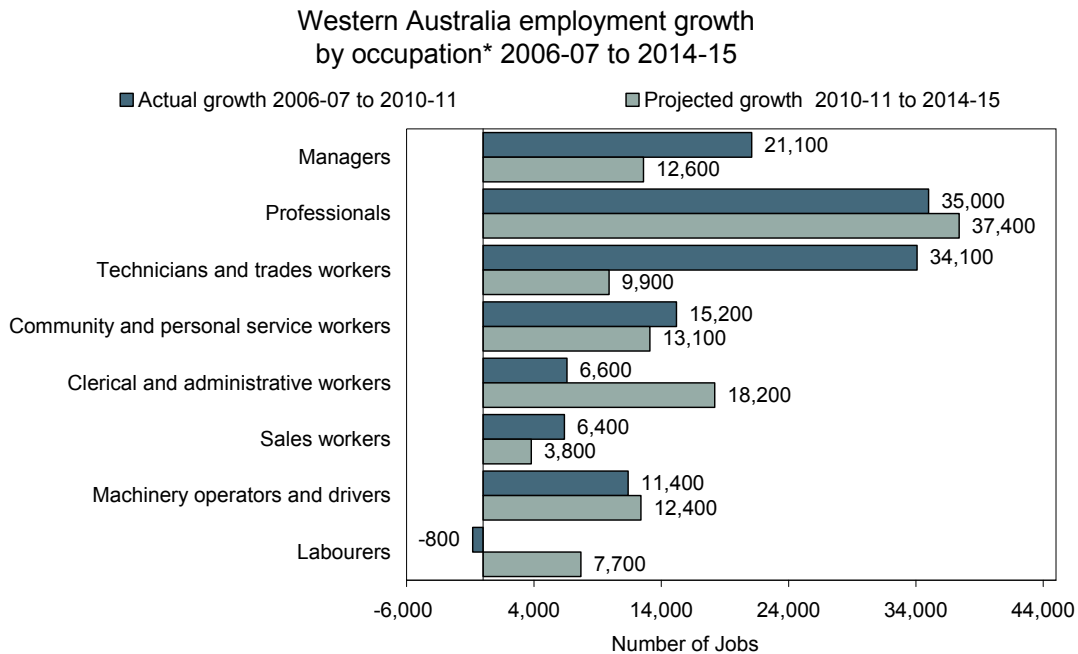


Source: Monash, June 2011 and ABS Cat. 6291.0 (year average levels shown)

By 2014–15, employment in this industry is forecast to increase to 59 300 jobs, corresponding to total growth of 3 400 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 6 700 jobs, in contrast to a decline in the repair and maintenance sector such as automotive repair and maintenance and machinery and equipment repair and maintenance (down 3 300 jobs).

Occupational employment growth

The graph below shows a comparison of employment growth across the main occupational divisions in Western Australia for the period 2006–07 to 2010–11 (using historical ABS data) and 2010–11 to 2014–15 (using forecast employment data produced by the Centre of Policy Studies at Monash University – June 2011).



Source: Monash, June 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.

Employment prospects are dependant 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 2006–07 and 2010–11, professionals experienced the highest increase in the number of new jobs at 35 000. This was followed by technicians and trades workers with 34 100 new jobs, and managers at 21 100.

By 2014–15, professionals, technicians and trades workers and managers are anticipated to collectively account for 52.2% of jobs growth in the State.

In the four years to 2010–11, employment in the clerical and administrative occupations grew by 6 600 persons or 1.0% per annum. However, in the forecast period, employment growth in this occupational group is set to increase by almost three times (18 200 persons or 2.6% per annum). The main industries in which this projected growth is expected to occur include professional and technical services; transport, postal and warehousing; and education and training.

In contrast to the historical period, employment growth for technicians and trades workers is predicted to be more modest in the forecast period, creating just under 10 000 additional jobs. The industries in which this growth is expected to occur most strongly include construction; mining; and wholesale trade. Industries which are predicted to show a decline in the employment of technicians and trades workers include other services; manufacturing; agriculture, forestry, and fishing; and retail trade.

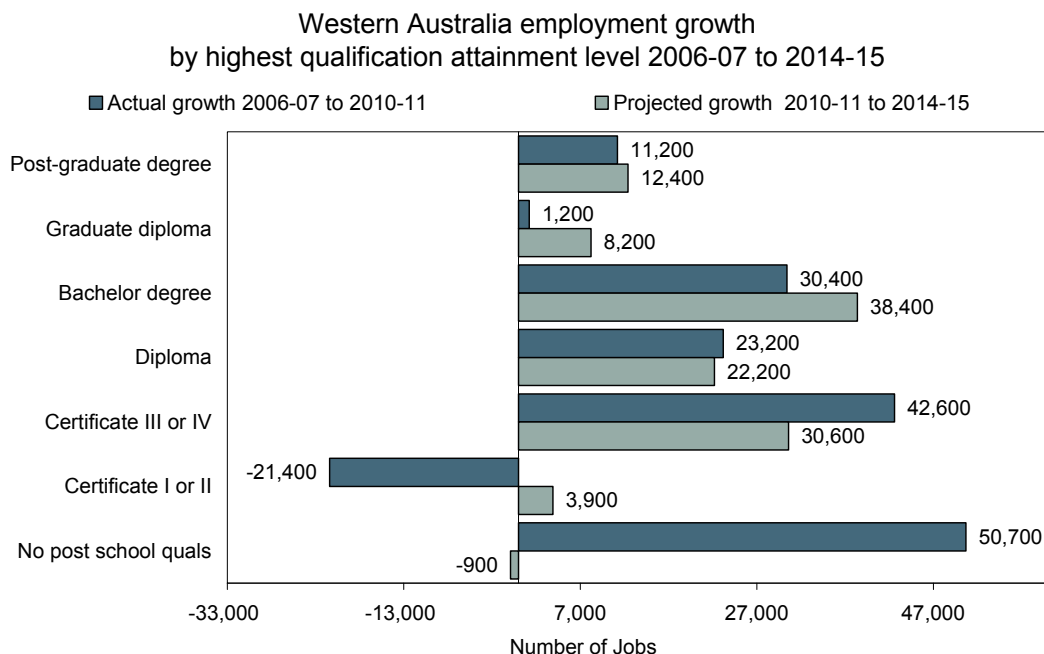
In the forecast four years to 2014–15, the most substantial increases in additional jobs in terms of specific occupations (at the four digit ANZSCO level of classification) are expected in the following areas:

- truck drivers (4 400 additional jobs)
- accountants (3 500)
- office managers (3 300)
- advertising and sales managers (3 200)
- registered nurses (3 200)
- nursing support and personal care workers (3 100)
- aged and disabled carers (2 900)
- storepersons (2 600)
- general clerks (2 500)
- chief executives and managing directors (2 200)

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

Employment growth by highest qualification attainment level

The graph below illustrates employment growth by highest qualification attainment levels in Western Australia for the period 2006–07 to 2010–11 (historical) and 2010–11 to 2014–15 (forecast), produced by Monash University (June 2011).



Source: Monash, June 2011

Note: Figures are rounded to the nearest 100.

Between 2006–07 and 2010–11, the largest increase in employment was for persons without post school qualifications (50 700 jobs). Persons holding a certificate III or IV experienced the second largest increase in employment (42 600 jobs), with an annual average employment growth rate of 4.5%.

For the four year period out to 2014–15, the largest employment growth is expected for individuals holding a bachelor degree (38 400 jobs), followed by those with a certificate III or IV qualification (30 600 jobs).

In contrast, individuals without post school qualifications are projected to experience a decline in employment of 900 jobs¹⁶ in comparison to the growth of 50 700 jobs in the historical period to 2010–11. 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.

¹⁶ The fall in employment for persons 'without post school qualifications' is driven mainly by forecast declines for this group in the occupational categories of managers; sales workers; technicians and trades workers; and professionals without post school qualifications. However, total employment in these occupational groups (inclusive of other qualification groups) is forecast to grow, based on an assumption of increased demand for skills in the future (for example, increases in the requirements for credentials, recognition of prior learning, up-skilling of the existing workforce and similar).

Initiatives to address skill shortages

In response to skill shortages predicted for Western Australia over coming years, the State Government launched *Skilling WA - A workforce development plan for Western Australia* in December 2010. This is a whole of government plan that provides a strategic framework directed at building, attracting and retaining a skilled workforce to meet the economic needs of the State.

The framework of the *Skilling WA* implementation plan is built on five key strategic goals. Below is a summary of these five key areas and some of the main progress made against each of them to date.

Participation of under-represented groups

Initiatives to increase participation of under-represented groups includes:

- the removal of mature age workers compensation restrictions;
- improved career development centres;
- initial development of flexible working arrangement tool online;
- the establishment of state wide Aboriginal workforce development centres; and
- the strategies outlined in *Training together-working together* to better connect employers with Aboriginal people.

Targeted skilled migration

While the Western Australian Government's first priority is to encourage Western Australians to develop the skills required by industry, migration remains a necessary strategy to supplement the State's workforce. Strategies to do this surround targeted skilled migration, and include:

- the State's *Skilled Migration Strategy* released in March 2011;
- the completion of a Skilled Migration Mission to the UK and Ireland in July 2011, led by the Minister for Training and Workforce Development and a delegation of key industry workforce development groups ;
- the establishment of a Western Australian skilled migration information portal to support employers and prospective migrants, and promote Western Australia as a destination of choice for living and working;
- implementation of online processing for the state sponsorship visa program nominations;
- skilled migration forums for employers state wide; and
- representations to the Australian Government on national migration.

Workforce attraction and retention

- Initiatives focused on improved access to housing as detailed in the recently released State affordable housing strategy to contribute to workforce attraction and retention.
- Planned delivery of service worker accommodation in the Pilbara and Kimberley regions.
- Regional workforce development plans currently in varied stages of development or implementation.

Skills development and utilisation

- A record number of course enrolments for both institutional and employment based training was achieved in 2010;
- Significant progress in the areas of skills development and utilisation with the allocation of an additional \$33.4 million for 12 000 more training places in the 2011–12 budget; and
- Initiatives focused on key occupation training pathways, literacy and numeracy policy initiatives, more flexible trade training practices.

Planning and coordination

Cross government planning and coordination efforts through:

- reporting on progress and issues to the Directors General Working Group under the Ministerial Taskforce on Approvals, Development and Sustainability;
- regular workforce development data updates posted on the Department of Training and Workforce Development 's website;
- initiatives to improve the collection and analysis of data and the development of forecasting and modelling tools; and
- contribution to the national workforce development agenda by :
 - the Minister of Training and Workforce Development chairing the Workforce Development Supply and Demand Principles Committee, which reports to the Standing Council on Tertiary Education Skills and Employment;
 - representation on the Commonwealth/State Migration Working Party and the Australian Government's Skilled Migration Consultative Panel; and
 - ongoing involvement with the implementation of the National Resources Sector Employment Taskforce report.

Training Council network

The Western Australian Training Council network contributes significantly to the implementation of *Skilling WA* through:

- advice provided to Government on workforce and training needs;
- working with industry and employers on initiatives to address skill and labour shortages; and
- the implementation of their industry specific workforce development plans.

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Appendix: 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'¹⁷, 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).

¹⁷ 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/elecpr/ip-76.htm>

Unless otherwise stated, historical employment data in this paper are based on the Labour Force survey of the Australian Bureau of Statistics (ABS). This survey is based on a sample of private dwellings (such as houses, flats, apartments,) and non-private dwellings (hotels, motels, institutions), and covers the civilian population¹⁸ aged 15 years and over.

The sample size the ABS uses translates to a coverage of about one in 315 persons (0.32%) of the civilian population aged 15 years and over in Australia, with a somewhat higher coverage of approximately one 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.

While the survey is carried out monthly, not all data is collected monthly — for example, the data presented in this paper on employment by industry is only collected in the middle month of each quarter (February, May, August and November).

Due to the use of a survey sample, sampling error can be a key consideration when interpreting movements or derived rates in the labour market data. These errors occur because a sample, rather than the entire population, is being surveyed.

One measure of the likely difference resulting from not having all dwellings/persons in the survey is given by what is termed a 'standard error', a measure which indicates the extent to which a survey estimate is likely to deviate from its true population. In particular, for many small estimates, standard errors are large relative to the size of the employment estimates.

The standard error is expressed as a number, and can demonstrate the reliability of the estimate assessed in terms of its likelihood of falling within a certain range. By way of illustration, the ABS Labour Force survey estimated that there were 54 700 people unemployed in Western Australia as at the end of 2010–11 (for instance, the estimate for the month of June 2011).

The standard error associated with this unemployment estimate is calculated at 4 000 — this means that statistically:

- there were approximately two chances in three that the actual number of unemployed persons in the State as at June 2011 fell within the range of one standard deviation (the standard error) either side of 54 700 (that is, 54 700 plus or minus 4 000, which equates to a range of 50 700 to 58 700 persons); and
- there were approximately nineteen chances in twenty that the actual number of unemployed persons in the State as at June 2011 fell within the range of two standard deviations (twice the standard error) either side of 54 700 (that is, 54 700 plus or minus 8 000 – equating to a range of 46 700 to 62 700 persons).

¹⁸ 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.

A relative standard error (RSE) is simply the standard error expressed as a fraction of the estimate. In the case of the above illustration, the RSE for Western Australia's June 2011 unemployment estimate is 7.3% (that is, 4 000 divided by 54 700).

As a general guide, any estimate with a RSE of 25% or greater is subject to very high sampling error, and should therefore be used with caution (for instance, only as being very broadly indicative).

For example, from December 2009 onwards (the last time the sample size for the labour force survey was materially changed), monthly estimates of around 3 200 persons and below for Western Australia have a relative standard error of 25% or higher. This means estimates of around this size and smaller are likely to be subject to sampling variability too high for most practical purposes of analysis and/or interpretation.

Illustrated another way, with approximately one in 246 people in Western Australia's 15+ civilian population being surveyed at any given time, an estimate of around 3 200 persons means the estimate is being driven by the survey answers of just 13 people (3 200 divided by 246).

To some degree, the use of annual averages for most of the labour market estimates in this document means that such sampling issues are reduced somewhat. However, the estimates (or movements based on the estimates) for small sized industries and segments of the labour market represented by quite small numbers should be still be used with a degree of caution.

Further note on annual averages

'Annual average' growth rates compare the most recent twelve months (one year's worth) of data against the corresponding twelve months worth of data from a year ago.

As the measure therefore incorporates 24 monthly observations (or eight observations in the case of quarterly data), 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).

Similarly, annual average rates (for example, for the unemployment rate) are an average across the full year (incorporating 12 monthly observations or four quarterly observations).

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