Australian Government | Australian Workforce and Productivity Agency

Construction

…covers residential and commercial building, heavy and civil construction and support services such as surveying, building planning and aspects of design, off-site construction such as shop fitting, sign manufacture and plumbing.

This suite of Industry Snapshots complements *Future Focus*, the 2013 National Workforce Development Strategy. These snapshots provide additional information and analysis on each industry to assist stakeholders in planning for the future of their industry or sector. It should be noted that the longer term data contained in this publication is based on AWPA's four scenarios for Australia to 2025 and is not intended to be compared to other data sources or projections.

Key points

- The construction industry employs over one million people Australia-wide, accounting for around nine per cent of the total workforce.
- Employment in construction has shown modest growth over the past five years.
- Nearly two-thirds (63 per cent) of the construction workforce is employed in small enterprises (i.e. those that employ less than 20 workers).
- More than one third (39 per cent) of workers in the construction industry is employed in regional and remote areas—slightly higher than the all-industry average of 37 per cent.[1]
- The majority of the construction workforce is male (89 per cent) and employed full-time (86 per cent), compared to 54 per cent and 70 per cent, respectively, for all industries.
- More than twice the proportion of workers in construction (47 per cent) has completed a Certificate III or IV level qualification, compared to 20 per cent for all industries.
- A detailed employment profile for the construction industry (including information on its workforce, industry and occupational characteristics) can be found at www.skillsinfo.gov.au.

Industry outlook

In 2011–12, the construction industry contributed 7.7 per cent ($106.5b) to the national economy in terms of industry value added.[2] The building and construction sector is also closely aligned with a number of other interdependent industries including manufacturing, wholesale and retail trade, architectural and professional services, and the financial and insurance services industry. As such, construction activity serves as an important indicator of Australia's national progress and economic well-being, and encompasses residential dwellings, non-residential building (e.g. hospitals and schools) and engineering infrastructure (e.g. roads, bridges and tunnels).[3]

[1] Regional and remote areas are defined as those outside state capital cities.
[2] 'Industry value added' is the measure of the contribution by industry to gross domestic product (GDP) at basic prices. ABS (2012) *Australian System of National Accounts*, cat. no. 5204.0, Table 11.
[3] ABS (2010) *Measures of Australia's Progress 2010*, cat. no. 1370.0.

Short-term growth

The construction industry has experienced modest employment growth over the last five years, at around 4 per cent compared to 7.4 per cent for all industries. Construction Services is the largest employing subsector and has grown by around 6.3 per cent, or 41,100 workers, over this period. Employment in the Building Construction subsector has fallen by around one fifth over the past five years, but strong employment gains have been made in Heavy and Civil Engineering Construction, which has grown by more than three times the all-industry average during this time.

Table 1 Current and past employment in construction

Industry	Current employment		Past growth: five years	
	'000	% of total	'000	%
Construction	**1,022.3**	**8.8**	**39.5**	**4.0**
Building Construction	204.5	1.8	-53.4	-20.7
Heavy and Civil Engineering Construction	70.3	0.6	13.7	24.1
Construction Services	691.9	6.2	41.1	6.3
All industries	**11,588.7**	**100.0**	**798.1**	**7.4**

Note: Data for industry subsectors may not sum to the industry total because data for each subsector have been separately seasonally adjusted and trended and at the higher levels include 'not further defined' categories.
Source: ABS (2013) *Labour Force Australia*, February, cat. no. 6291.0.55.003 (DEEWR trend).

Long-term growth

Australia needs to position itself in a world where work is changing rapidly. Technological innovation, globalisation, the Asian century and new patterns of work are impacting on the demand for skills and the speed of change is making it hard to predict and plan for the future.

To deal with this uncertainty, the Australia Workforce and Productivity Agency (AWPA) has adopted a scenario planning approach to help us overcome these limitations in making projections about the future. Scenarios are alternative visions of potential futures, and provide a means to make decisions that take account of uncertainty.

AWPA developed four possible, plausible scenarios for Australia to 2025.

- In the **Long Boom** scenario, the high demand for resources traded with China and other countries continues. Industries challenged by the high terms of trade undertake structural adjustment. This results in a scenario of sustained prosperity and a restructured economy.
- In **Smart Recovery**, the challenges facing Europe and the United States affect financial markets. This means low growth for Australia to 2014–15. Growth then improves and Australia benefits from industry and government strategies to implement a knowledge economy.
- In **Terms of Trade Shock**, resource prices fall mainly due to increased supply from other countries, the Australian dollar falls and we move to a broader-based economy.
- **Ring of Fire** is a risky world with multiple economic and environmental shocks resulting in ongoing lower growth.

Economic modelling against each of these four scenarios was undertaken by Deloitte Access Economics (DAE) to determine the skills demand for the economy into the future.[4]

Average annual employment growth in the construction industry is expected to be lower than the average for all industries to 2025, with a decline in employment under the Terms of Trade Shock and Ring of Fire scenarios. The sector is forecast to see high growth under the Long Boom in the years to 2018, at 2.6 per cent per annum, but this will fall to 1.6 per cent per annum to 2025. Construction Services is expected to have the strongest employment growth among the industry subsectors across all four scenarios.

Table 2 Average annual industry employment growth in four scenarios, 2011–18 and 2011–25 (% per annum)

Industry	Long Boom		Smart Recovery		Terms of Trade Shock		Ring of Fire	
	2018	2025	2018	2025	2018	2025	2018	2025
Construction	**2.6**	**1.6**	**0.7**	**0.9**	**-0.6**	**-0.2**	**-0.9**	**-0.6**
Building Construction	1.3	0.2	-0.5	-0.4	-1.8	-1.5	-2.1	-2.0
Heavy and Civil Engineering Construction	1.7	1.1	-0.1	0.4	-1.4	-0.7	-1.7	-1.1
Construction Services	3.1	2.0	1.2	1.3	-0.1	0.2	-0.4	-0.2
All industries	**2.1**	**2.0**	**1.5**	**1.5**	**1.7**	**1.6**	**0.8**	**0.7**

Source: Deloitte Access Economics (2012) *Economic modelling of skills demand and supply*, Scenario output—detailed employment results.

Occupation outlook

Key occupations

The largest employing occupations within the construction industry are building-related trades such as Carpenters, Electricians, Plumbers, Paintings Trades Workers and Plasterers. Construction Managers and labourers (including Concreters and Building and Plumbing Labourers) also feature strongly in industry employment, as do machinery operators and drivers involved in site preparation (e.g. Earthmoving Plant Operators). Together, the top ten occupations in construction account for just over half of total employment in the industry.

[4] A description of the scenarios and the Deloitte Access Economics modeling of employment in each, with state and territory breakdowns, is available at the AWPA website www.awpa.gov.au.

Table 3 Top ten construction occupations

Occupation		People employed	Industry employment
		'000	% of total
3312	Carpenters and Joiners	98.9	9.9
3411	Electricians	91.9	9.2
3341	Plumbers	73.5	7.4
1331	Construction Managers	60.5	6.1
3322	Painting Trades Workers	47.6	4.8
8212	Concreters	35.6	3.6
8211	Building and Plumbing Labourers	35.6	3.6
7212	Earthmoving Plant Operators	33.8	3.4
3121	Architectural, Building and Surveying Technicians	32.7	3.3
3332	Plasterers	27.0	2.7
Total construction		**999.8**	**53.7**

Source: ABS (2013) *Labour Force Australia*, detailed quarterly report, 2012 average of four quarters, cat. no. 6291.0.55.003.

Short-term growth

Table 4 shows current employment and past growth for the occupations that feature prominently within the industry. **Note that the figures refer to the expected number of people in these occupations across all industries, not just in the construction sector**.

Employment growth has been strong for Electricians, Plumbers and Concreters over the past five years, growing at around twice the rate for all industries. However occupations such as Plasterers, Building and Plumbing Labourers, and Construction Managers have experienced a strong decline in employment over the same period.

Table 4 Current and past employment in key occupations

Occupation		Current employment (all industries)		Past growth: five years	
		'000	% of total	'000	%
3312	Carpenters and Joiners	132.8	1.2	4.4	3.4
3411	Electricians	130.2	1.2	17.3	15.3
3341	Plumbers	85.4	0.8	12.2	16.7
1331	Construction Managers	63.5	0.6	-6.4	-9.2
3322	Painting Trades Workers	49.3	0.4	-0.9	-1.7
8212	Concreters	41.5	0.4	5.1	14.1
8211	Building and Plumbing Labourers	46.3	0.4	-10.9	-19.0
7212	Earthmoving Plant Operators	56.5	0.5	0.4	0.8
3121	Architectural, Building and Surveying Technicians	52.6	0.5	-3.1	-5.5
3332	Plasterers	26.0	0.2	-7.6	-22.5
All employed		**11,588.7**	**100.0**	**798.1**	**7.4**

Source: ABS (2013) *Labour Force Australia*, February, cat. no. 6291.0.55.003 (DEEWR trend).

Long-term growth and job openings

Table 5 indicates the long-term net job growth per annum expected in these occupation groups, according to Deloitte Access Economics' economic modelling of the scenarios.

Average annual growth for each of the top ten construction occupations is expected to vary over the longer-term. Under the Long Boom and Smart Recovery scenarios, Plumbers, Construction Managers, Electricians and Concreters are all forecast to experience high growth to 2028 and above-average growth to 2025. Occupations such as Earthmoving Plant Operators and Architectural, Building and Surveying Technicians are anticipated to see modest growth, while Plasterers is the only occupation expected to experience a decline in employment across all four scenarios.

Table 5 Average annual occupation growth in four scenarios, 2011–18 and 2011–25 (%pa)

Industry		Long Boom		Smart Recovery		Terms of Trade Shock		Ring of Fire	
		2018	2025	2018	2025	2018	2025	2018	2025
3312	Carpenters and Joiners	0.2	0.1	-0.8	-0.3	-1.5	-0.9	-1.7	-1.1
3411	Electricians	2.8	2.1	1.7	1.6	1.0	1.0	0.6	0.6
3341	Plumbers	3.7	2.4	2.1	1.8	1.1	0.9	0.7	0.4
1331	Construction Managers	3.7	2.4	2.2	1.8	1.4	1.2	1.0	0.8
3322	Painting Trades Workers	1.7	0.4	0.0	-0.3	-1.2	-1.3	-1.6	-1.8
8212	Concreters	4.1	2.2	2.7	1.7	1.9	1.0	1.5	0.6
8211	Building and Plumbing Labourers	1.3	0.6	-0.1	0.0	-0.8	-0.6	-1.2	-1.1
7212	Earthmoving Plant Operators	2.4	1.7	1.1	1.0	0.3	0.3	-0.3	-0.4
3121	Architectural, Building and Surveying Technicians	2.6	1.7	1.3	1.1	0.9	0.9	0.2	0.3
3332	Plasterers	-0.5	-0.5	-2.2	-1.2	-3.3	-2.1	-3.7	-2.6
All occupations		**2.1**	**2.0**	**1.5**	**1.5**	**1.7**	**1.6**	**0.8**	**0.7**

Source: Deloitte Access Economics (2012) *Economic modelling of skills demand and supply*, Scenario output—detailed employment results.

As noted, the data in Table 5 concerns employment growth in an industry. The number of total **job openings** which includes both employment growth and **the replacement resulting from individuals leaving the occupation net of those re-entering** can also be estimated. This replacement requirement is particularly significant in industries where there are high numbers of people retiring or leaving the occupation.

Table 6 shows the average annual job openings projected in key construction occupations to 2025. Concreters are expected to see the highest proportion of job openings over this period, exceeding the average for all occupations under Long Boom and Smart Recovery. Construction Managers and Plumbers are also predicted to have a high proportion of job openings to 2025 across all four scenarios, albeit at slightly lower rates per annum than the all-occupation average.

Table 6 Average annual job openings per annum, 2011 to 2025, in four scenarios

Occupation		Long Boom		Smart Recovery		Terms of Trade Shock		Ring of Fire	
		('000)	%	('000)	%	('000)	%	('000)	%
3312	Carpenters and Joiners	5.4	2.0	4.8	1.6	4.2	1.0	4.1	0.8
3411	Electricians	5.9	3.4	5.0	2.9	3.9	2.3	3.4	1.8
3341	Plumbers	3.6	3.9	3.1	3.3	2.3	2.4	2.1	1.9
1331	Construction Managers	4.1	4.3	3.4	3.7	2.8	3.1	2.5	2.7
3322	Painting Trades Workers	1.7	2.5	1.4	1.8	1.2	0.9	1.1	0.4
8212	Concreters	2.1	4.6	1.8	4.1	1.5	3.4	1.5	3.0
8211	Building and Plumbing Labourers	2.8	3.3	2.4	2.7	2.2	2.0	2.1	1.6
7212	Earthmoving Plant Operators	2.0	3.3	1.6	2.7	1.1	2.0	1.0	1.3
3121	Architectural, Building and Surveying Technicians	1.7	2.7	1.3	2.1	1.1	1.9	0.9	1.3
3332	Plasters	1.6	2.5	1.3	1.9	1.1	0.9	1.1	0.4
All occupations		**576.4**	**4.4**	**500.9**	**3.9**	**513.3**	**4.0**	**391.4**	**3.1**

Source: Deloitte Access Economics (2012) *Economic modelling of skills demand and supply*, Scenario output—detailed employment results. Net replacement demand by AWPA (2013).

As Table 7 shows, nearly as many, or in some cases, more job openings are created by replacement as by new growth. For example, for Plasterers in the Long Boom world, it is expected that a total of 70,900 jobs will created by replacement requirements, while only 29,100 job openings will be created by growth (that is, new jobs). High replacement demand is attributable to workforce demographics such as the age profile of current workers, and workforce dynamics such as the rate of job turnover. Under the Terms of Trade Shock and Ring of Fire scenarios, all job openings in key construction occupations are expected to be driven by replacement requirements rather than growth.

Table 7 Total job openings (growth and net replacement) in four scenarios, 2011 to 2025

7.1 Long Boom

Occupation		Total growth (persons)		Net replacement estimates (persons)		Total job openings (persons)	
		('000)	%	('000)	%	('000)	%
3312	Carpenters and Joiners	41.2	51.1	39.4	48.9	80.6	100.0
3411	Electricians	55.4	62.9	32.7	37.1	88.1	100.0
3341	Plumbers	31.8	58.9	22.2	41.1	54.1	100.0
1331	Construction Managers	32.2	52.6	29.0	47.4	61.2	100.0
3322	Painting Trades Workers	9.1	36.0	16.2	64.0	25.3	100.0
8212	Concreters	14.5	45.1	17.6	54.9	32.1	100.0
8211	Building and Plumbing Labourers	18.0	42.5	24.4	57.5	42.4	100.0
7212	Earthmoving Plant Operators	13.9	47.2	15.5	52.8	29.4	100.0
3121	Architectural, Building and Surveying Technicians	15.6	61.0	10.0	39.0	25.6	100.0
3332	Plasterers	6.9	29.1	16.9	70.9	23.8	100.0
All occupations		**3,889.7**	**45.0**	**4,755.6**	**55.0**	**8,645.3**	**100.0**

7.2 Smart Recovery

Occupation		Total growth (persons)		Net replacement estimates (persons)		Total job openings (persons)	
		('000)	%	('000)	%	('000)	%
3312	Carpenters and Joiners	34.7	48.4	37.0	51.6	71.8	100.0
3411	Electricians	44.2	59.0	30.6	41.0	74.8	100.0
3341	Plumbers	26.1	56.2	20.3	43.8	46.5	100.0
1331	Construction Managers	23.7	47.0	26.7	53.0	50.4	100.0
3322	Painting Trades Workers	6.7	31.3	14.7	68.7	21.3	100.0
8212	Concreters	11.0	40.4	16.3	59.6	27.3	100.0
8211	Building and Plumbing Labourers	13.5	37.4	22.5	62.6	36.0	100.0
7212	Earthmoving Plant Operators	9.5	39.9	14.4	60.1	23.9	100.0
3121	Architectural, Building and Surveying Technicians	10.7	53.6	9.3	46.4	20.0	100.0
3332	Plasterers	4.8	23.9	15.3	76.1	20.2	100.0
All occupations		**2,953.2**	**39.3**	**4,559.6**	**60.7**	**7,512.9**	**100.0**

7.3 Terms of Trade Shock

Occupation		Total growth (persons)		Net replacement estimates (persons)		Total job openings (persons)	
		('000)	%	('000)	%	('000)	%
3312	Carpenters and Joiners	26.6	42.7	35.7	57.3	62.3	100.0
3411	Electricians	29.1	49.6	29.5	50.4	58.6	100.0
3341	Plumbers	15.0	43.7	19.2	56.3	34.2	100.0
1331	Construction Managers	15.9	38.4	25.6	61.6	41.5	100.0
3322	Painting Trades Workers	3.8	21.8	13.8	78.2	17.7	100.0
8212	Concreters	7.7	33.0	15.6	67.0	23.2	100.0
8211	Building and Plumbing Labourers	10.8	33.2	21.6	66.8	32.4	100.0
7212	Earthmoving Plant Operators	3.3	19.5	13.7	80.5	17.0	100.0
3121	Architectural, Building and Surveying Technicians	8.0	46.6	9.1	53.4	17.1	100.0
3332	Plasterers	2.4	14.2	14.5	85.8	16.9	100.0
All occupations		**3,080.4**	**40.0**	**4,619.3**	**60.0**	**7,699.6**	**100.0**

7.4 Ring of Fire

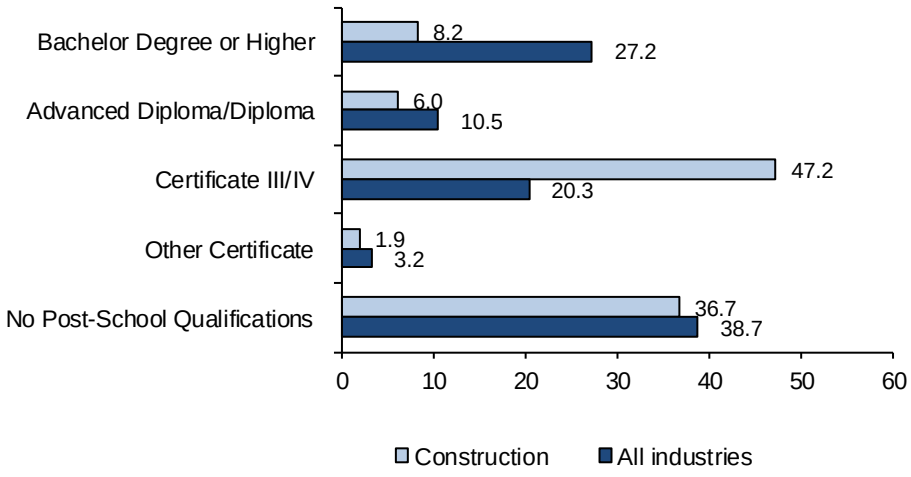
Occupation		Total growth (persons)		Net replacement estimates (persons)		Total job openings (persons)	
		('000)	%	('000)	%	('000)	%
3312	Carpenters and Joiners	26.6	43.2	35.1	56.8	61.7	100.0
3411	Electricians	22.5	44.0	28.6	56.0	51.0	100.0
3341	Plumbers	12.7	40.7	18.6	59.3	31.3	100.0
1331	Construction Managers	12.1	32.9	24.7	67.1	36.8	100.0
3322	Painting Trades Workers	3.6	21.1	13.3	78.9	16.9	100.0
8212	Concreters	6.8	30.9	15.1	69.1	21.9	100.0
8211	Building and Plumbing Labourers	10.0	32.4	20.9	67.6	30.9	100.0
7212	Earthmoving Plant Operators	1.8	11.9	13.1	88.1	14.8	100.0
3121	Architectural, Building and Surveying Technicians	5.2	37.3	8.7	62.7	13.9	100.0
3332	Plasterers	2.3	14.3	14.0	85.7	16.3	100.0
All occupations		**1,532.9**	**26.1**	**4,338.5**	**73.9**	**5,871.4**	**100.0**

Source: Deloitte Access Economics (2012) *Economic modelling of skills demand and supply*, Scenario output—detailed employment results. Net replacement demand by CEET (2013).

Education and training profile

More than twice the proportion of workers in construction (47.2 per cent) have completed a Certificate III or IV level qualification, as compared to all industries (20.3 per cent). This indicates that vocational education and training is a vital source of skills for the construction sector.

Figure 1 Education profile of the construction workforce (%)



Note: Excludes 'Level of education not stated' from total.
Source: DEEWR (2012) *Australian Jobs 2012* (ABS 2011 Census data).

Figure 2 illustrates how demand for qualifications is expected to change over time. It shows the current education profile for each respective occupation: across all industries and within the construction industry. It then shows projected levels of educational attainment to 2025 by each occupation group depending on which of the four scenarios eventuates.

As shown in Figure 2, the proportion of managers with a Bachelor degree or higher increases over time across all four scenarios, while the proportion without any post-school qualifications decreases to less than one in five in all scenarios except Ring of Fire.

Currently, more than two-thirds of professionals working in the construction industry hold a Bachelor degree or higher. This is expected to increase by a further 8–10 percentage points in the years to 2025 under the three higher growth scenarios.

Technicians and trades workers in construction are forecast to show a modest increase in qualification holding to 2025, with most of this appearing at the Certificate III/IV level.

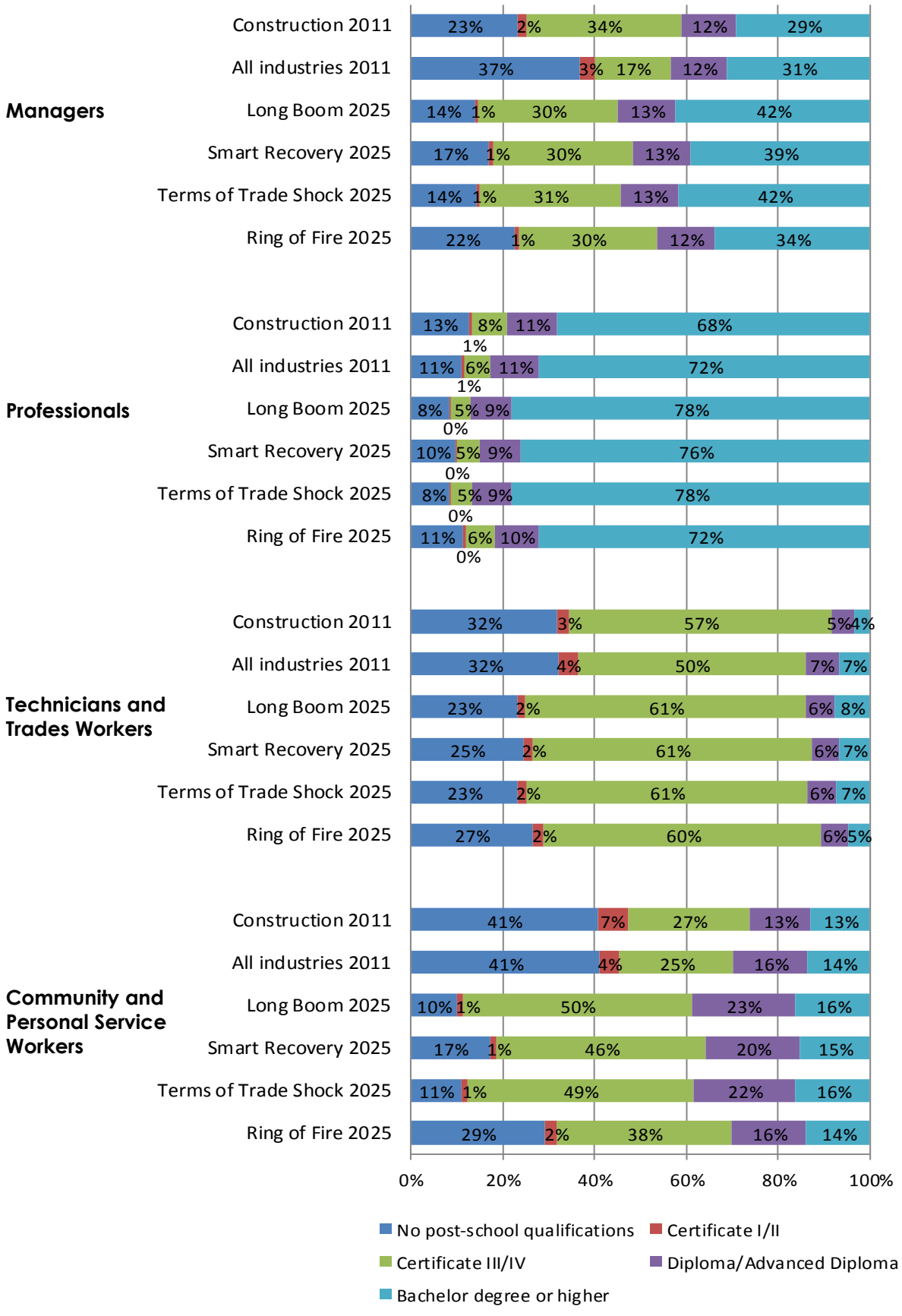
The most significant rise in post-school qualifications within the industry appears for clerical and administrative workers, with less than half the proportion of workers in 2025 without qualifications in the Long Boom compared to 2011.

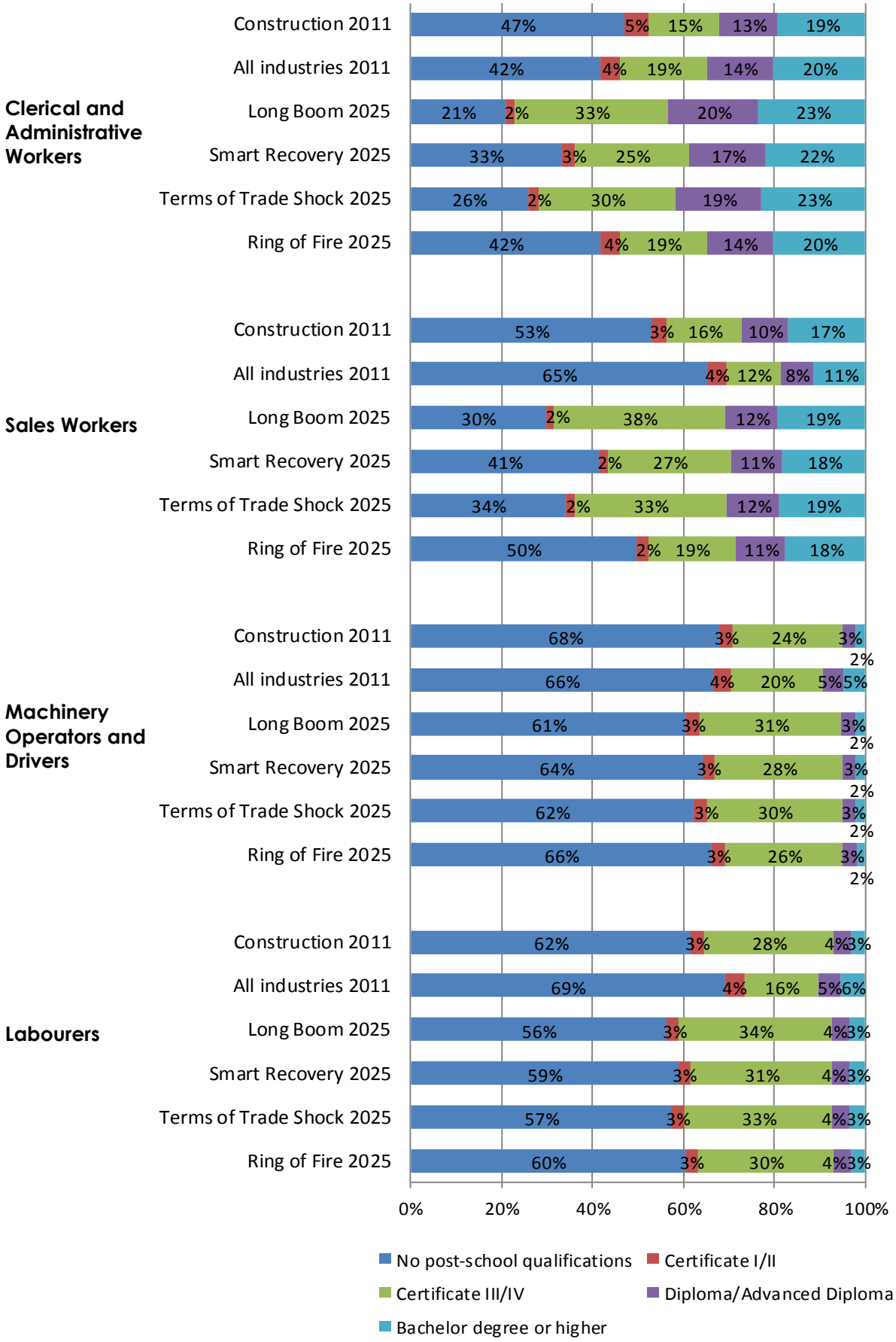
A comparable trend in upskilling is seen for community and personal service workers, as well as for sales workers, however it should be noted that these occupation groups are relatively small within the construction industry (accounting for around 2,300 and 7,800 workers, respectively). Qualification projections for these two groups should therefore be treated with caution.

The majority of machinery operators and drivers in the construction sector are expected to continue to have no post-school qualifications in the years to 2025. However, this proportion is expected to reduce from more than two-thirds in 2011 to 61 per cent in 2025 under the Long Boom.

A similar pattern can be observed for labourers, with the proportion with no post-school qualifications forecast to drop from 62 per cent in 2011 to 56 per cent under the Long Boom, and slightly higher across the other three scenarios to 2025.

Figure 2 Educational attainment in the construction industry by occupation, 2011 and projections to 2025 (%)





Source: ABS (2012) *Survey of Education and Work 2012*, cat. no. 6227.0; and DAE (2012) Unpublished data.

Specialised occupations

In *Future Focus*, the 2013 National Workforce Development Strategy, AWPA has proposed that national planning for skills and industry workforce development should focus on **specialised occupations**. Specialised occupations are defined as those 'where specialised skills, learned in formal education and training, are needed at entry level and where the impact of market failure is potentially significant for the economy and/or the community.'

Specialised occupations demonstrate these characteristics:

- long lead time—skills are highly specialised and require extended learning and preparation time over several years;
- high use—skills are deployed for the uses intended (i.e. good occupational 'fit');
- high risk—the disruption caused by the skills being in short supply is great, resulting either in bottlenecks in supply chains or imposing significant economic or community costs because an organisation cannot operate; and
- high information—the quality of information about the occupation is adequate to the task of assessing future demand and evaluating the first three criteria.

Monitoring skills supply, especially for specialised occupations, will remain a critical element in meeting our workforce needs.

Specialised occupations associated with the construction industry include:

Construction Managers
Engineering Managers
Land Economists and Valuers
Architects and Landscape Architects
Surveyors and Spatial Scientists
Urban and Regional Planners
Civil Engineering Professionals
Bricklayers and Stonemasons
Carpenters and Joiners
Floor Finishers
Painting Trades Workers
Glaziers
Plasterers
Wall and Floor Tilers
Plumbers
Electricians
Wood Machinists and Other Wood Trades Workers

More detailed information about specialised occupations is available in *Future Focus, 2013 National Workforce Development Strategy* at http://www.awpa.gov.au.

Example workforce development initiatives

Investment in workforce development has been shown to maximise people's capabilities, lift productivity and increase workforce participation. Employee satisfaction levels and engagement also increase when enterprises make better use of their employees' skills.[5] Current workforce development initiatives in construction include the following examples:

- The Australian and New Zealand Standard Classification of Occupations (ANZSCO) Review **of Civil Construction Occupations Project** was a joint project conducted by SkillsDMC and the Civil Construction Federation. The project aimed to provide government with an understanding of the issues arising from the ANZSCO classification of civil construction occupations. Further information can be found at www.skillsdmc.com.au.
- The **Construction Licensing Continuous Improvement Project** is being conducted to enhance the definition of occupational and other licensing competency requirements in the Construction, Plumbing and Services Integrated Framework Training Package. The project will produce a comprehensive report of the relevant current licensing categories and the competency requirements in each state and territory. Further information can be found at www.cpsisc.com.au.
- The **Construction and Property Services Industry Skills Council (CPSISC) Green Paper** is an industry consultation paper that is being prepared for distribution to stakeholders on workforce development. The purpose of the paper is to promote discussion on the key issues to be included in the development of the industry's 'White Paper' that will outline the construction industry's workforce development strategy. Further information can be found at www.cpsisc.com.au.

[5] Skills Australia (2012) *Better use of skills, better outcomes: A research report on skills utilisation in Australia.*