



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.

Key points

- ▶ The construction industry employs approximately one million people Australia-wide, accounting for around nine per cent of the total workforce
- ▶ Employment in construction is expected to continue to grow strongly over the next five years
- ▶ Nearly three-quarters (72 per cent) of the construction workforce is employed in small enterprises (i.e. those that employ less than 20 workers)
- ▶ More than a third (39 per cent) of workers in the construction industry are employed in regional and remote areas – slightly higher than the all-industry average of 37 per cent¹
- ▶ The majority of the construction workforce is male (88 per cent) and employed full-time (85 per cent), compared to 54 per cent and 70 per cent, respectively, for all industries
- ▶ More than twice the number of workers in construction (39 per cent) have completed a Certificate III or IV level qualification, as compared to all industries (18 per cent)
- ▶ 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 2009-10, the construction industry contributed 8.6 per cent (\$94.2b) 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 finance 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 (2010) *Australian System of National Accounts* (Cat. no. 5204.0).

³ ABS (2006) *Measures of Australia's Progress 2006* (Cat. no. 1370.0).

Short-term growth

The recent strong employment growth experienced by the construction industry is expected to continue over the next five years, albeit at a somewhat slower rate.

Table 1 Current and past employment in construction

| Industry | Current employment | | Past growth: five years | |
|---------------------|--------------------|--------------|-------------------------|-------------|
| | '000 | % of total | '000 | % |
| Construction | 1,006.7 | 9.1 | 151.8 | 17.8 |
| All employed | 11,044.6 | 100.0 | 1,060.1 | 10.6 |

Population: Employed people.

Source: DEEWR analysis of ABS trend data, May 2010 (Cat no: 6291.0.55.003).

Long-term growth

Skills Australia used scenario planning and economic modelling undertaken by Access Economics to calculate the skills demand for the economy into the future. The three scenarios are:

- ▶ Open Doors – assumes an industry and occupation structure that is driven by greater global openness, high economic growth and high productivity
- ▶ Low Trust Globalisation – assumes global competition but with more moderate participation rates, productivity growth and rates of growth of net migration, and accordingly, medium economic growth
- ▶ Flags – assumes a more protectionist economy, with a greater move to domestic self-sufficiency, a lower rate of net migration and productivity growth, and accordingly, assumes a low rate of economic growth.

Under each of the scenarios, average employment growth per annum is expected to be lower than the average for all industries (9.2 per cent) between 2010 and 2025.⁴ In the medium-term (to 2015), Access Economics' modelling shows that some industry sub-sectors are expected to decline.

⁴ A description of the scenarios and the Access Economics modeling of employment in each, with state and territory breakdowns, is available at the Skills Australia web-site www.skillsaustralia.gov.au.

Table 2 Average annual industry employment growth in three scenarios, 2010-15 and 2010-25 (%pa)

| Industry | Open Doors | | Low-Trust Globalisation | | Flags | |
|------------------------------------------|------------|------------|-------------------------|------------|------------|------------|
| | 2015 | 2025 | 2015 | 2025 | 2015 | 2025 |
| Construction | 0.7 | 1.7 | -0.1 | 1.0 | -0.6 | 0.5 |
| Building construction | -0.1 | 1.0 | -0.9 | 0.2 | 0.2 | 1.3 |
| Heavy and civil engineering construction | -0.1 | 1.0 | -0.9 | 0.2 | 0.2 | 1.3 |
| Construction services | 1.1 | 2.0 | 0.3 | 1.3 | -1.0 | 0.0 |
| All industries | 2.6 | 2.1 | 1.9 | 1.5 | 1.3 | 0.9 |

Source: Access Economics (2009) *Economic modelling of skills demand*, Table D1; conversion to ANZSIC by CEET (2010).

This industry trend is reflected in the employment growth by occupation within the construction industry [see following section], with labourers, structural construction tradespersons and plumbers all predicted to grow across all future scenarios but at a lower rate than the national average.

Occupation outlook

Key occupations

The largest occupational group within the construction industry is building-related tradespersons, such as carpenters, plumbers, electricians, painters and plasterers. Construction managers and labourers (including concreters and building and plumbing labourers) and earthmoving operators also feature strongly in industry employment.

Table 3 Top ten construction occupations in 2009

| Occupation | People employed | Industry employment |
|--------------------------------------------------------|-----------------|---------------------|
| ANZSCO | '000 | % of total |
| 3312 Carpenters and joiners | 97.7 | 9.9 |
| 3411 Electricians | 76.8 | 7.8 |
| 1331 Construction managers | 69.1 | 7.0 |
| 3341 Plumbers | 65.1 | 6.6 |
| 3322 Painting trades workers | 42.9 | 4.4 |
| 8211 Building and plumbing labourers | 38.3 | 3.9 |
| 7212 Earthmoving plant operators | 33.3 | 3.4 |
| 3332 Plasterers | 31.9 | 3.2 |
| 8212 Concreters | 31.4 | 3.2 |
| 3121 Architectural, building and surveying technicians | 30.9 | 3.1 |
| Total | 986.7 | 52.4 |

Source: ABS (2009) *Labour Force Australia*, detailed quarterly report, average of four quarters (Cat. no. 6291.0.55.003).

Short-term growth

Table 4 shows recent past and forecast growth rates 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 was very strong over the past five years for construction managers, electricians, plasterers, earthmoving plant operators, and plumbers. This growth is expected to continue in the short-term (to 2014-15). The decrease in employment growth experienced by some occupations over the past five years (such as among painting trades workers) is expected to reverse, and only bricklayers and stonemasons, are forecast to experience negative employment growth to 2014-15.

Table 4 Current and past employment in key occupations

| Occupation | Current employment (all industries) | | Past growth: five years | |
|--------------------------------------------------------|-------------------------------------|--------------|-------------------------|-------------|
| | '000 | % of total | '000 | % |
| ANZSCO | | | | |
| 1331 Construction managers | 77.3 | 0.7 | 27.6 | 55.5 |
| 3121 Architectural, building and surveying technicians | 52.9 | 0.5 | -6.7 | -11.3 |
| 3311 Bricklayers and stonemasons ^(a) | 34.4 | 0.3 | -1.2 | -3.3 |
| 3312 Carpenters and joiners | 110.2 | 1.0 | -1.1 | -1.0 |
| 3322 Painting trades workers | 44.3 | 0.4 | -1.8 | -3.9 |
| 3332 Plasterers | 40.8 | 0.4 | 9.8 | 31.7 |
| 3341 Plumbers | 77.7 | 0.7 | 16.6 | 27.1 |
| 3411 Electricians | 132.8 | 1.2 | 34.0 | 34.4 |
| 7212 Earthmoving plant operators | 58.7 | 0.5 | 13.8 | 30.8 |
| 8211 Building and plumbing labourers | 42.0 | 0.4 | -9.4 | -18.3 |
| 8212 Concreters | 37.3 | 0.3 | 1.8 | 5.2 |
| All employed | 11,044.6 | 100.0 | 1,060.1 | 10.6 |

(a) Added to table as a 'key occupation' within the industry.

Population: Employed people.

Source: DEEWR analysis of ABS trend data, May 2010 (Cat no: 6291.0.55.003).

Long-term growth and job openings

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

The average annual growth for each of the key construction occupations is expected to vary over the longer-term. For example, under Open Doors, only plumbers are forecast to match the all-occupation average to 2025. Conversely, under the Flags scenario, a number of construction occupations are expected to have above-average growth. These include construction, distribution and production managers; building and engineering technicians; electricians; and mobile plant operators.

Table 5 Average annual occupation growth in three scenarios, 2010-15 and 2010-25 (%pa)

| Industry | Open doors | | Low-trust globalisation | | Flags | |
|--------------------------------------------------------|------------|------------|-------------------------|------------|------------|------------|
| | 2015 | 2025 | 2015 | 2025 | 2015 | 2025 |
| ANZSCO | | | | | | |
| 133 Construction, distribution and production managers | 1.6 | 1.5 | 0.8 | 0.7 | 1.5 | 1.3 |
| 312 Building and engineering technicians | 2.1 | 1.9 | 1.5 | 1.3 | 1.5 | 1.4 |
| 331 Bricklayers, and carpenters and joiners | 0.7 | 1.6 | 0.0 | 0.9 | -0.4 | 0.6 |
| 332 Floor finishers and painting trades workers | 1.1 | 1.9 | 0.4 | 1.2 | -0.2 | 0.4 |
| 333 Glaziers, plasterers and tilers | 0.8 | 1.6 | 0.1 | 0.9 | -0.1 | 0.6 |
| 334 Plumbers | 1.2 | 2.1 | 0.4 | 1.4 | -0.7 | 0.4 |
| 341 Electricians | 1.7 | 1.8 | 1.1 | 1.1 | 1.0 | 1.1 |
| 721 Mobile plant operators | 2.2 | 2.0 | 1.5 | 1.3 | 1.3 | 1.1 |
| 821 Construction and mining labourers | 0.9 | 1.5 | 0.3 | 0.8 | 0.0 | 0.6 |
| All occupations | 2.6 | 2.1 | 1.9 | 1.5 | 1.3 | 0.9 |

Source: Access Economics (2009) *Economic modelling of skills demand*, Table D4 (ASCO); conversion to ANZSCO by CEET (2009). Three-digit ANZSCO job titles are used in this analysis.

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.

Under the Open Doors scenario, for example, some 8,500 construction, distribution and production manager jobs will need to be filled each year, accounting for a 3.5 per cent increase in total persons employed in the occupation per annum to 2025. Job openings in this occupation are also expected to exceed the all-occupation average under the Flags scenario.

Table 6 Average annual job openings, pa 2010 to 2025, in three scenarios

| Occupation | Open doors | | Low trust globalisation | | Flags | |
|--------------------------------------------------------|--------------|------------|-------------------------|------------|--------------|------------|
| | ('000) | % | ('000) | % | ('000) | % |
| ANZSCO | | | | | | |
| 133 Construction, distribution and production managers | 8.5 | 3.5 | 6.0 | 2.7 | 7.7 | 3.3 |
| 312 Building and engineering technicians | 4.8 | 3.3 | 3.7 | 2.7 | 3.8 | 2.7 |
| 331 Bricklayers, and carpenters and joiners | 6.1 | 3.5 | 4.6 | 2.8 | 4.0 | 2.5 |
| 332 Floor finishers and painting trades workers | 2.7 | 3.5 | 2.0 | 2.8 | 1.4 | 2.0 |
| 333 Glaziers, plasterers and tilers | 2.4 | 2.9 | 1.7 | 2.2 | 1.5 | 2.0 |
| 334 Plumbers | 2.9 | 3.4 | 2.0 | 2.7 | 1.3 | 1.7 |
| 341 Electricians | 4.9 | 3.4 | 3.7 | 2.8 | 3.6 | 2.7 |
| 721 Mobile plant operators | 5.6 | 3.7 | 4.2 | 2.9 | 3.8 | 2.7 |
| 821 Construction and mining labourers | 4.4 | 2.3 | 2.9 | 1.6 | 2.4 | 1.4 |
| All occupation average | 579.1 | 4.4 | 465.9 | 3.8 | 373.7 | 3.2 |

Source: Access Economics (2009) *Economic modelling of skills demand*, Table D4 (ASCO); conversion to ANZSCO and net replacement demand by CEET (2009). Three-digit ANZSCO job titles are used in this analysis.

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 construction, distribution and production managers in the Open Doors world, it is expected that 77,400 jobs will be created by replacement requirements – accounting for 57 per cent of total job openings to 2025. For each of the other key construction occupations in the Open Doors world, however, annual growth is expected to produce the majority of job openings.

By comparison, replacement requirements are expected to account for the majority of job openings in the Flags scenario, across all key occupations.

Table 7 Total job openings (growth and net replacement) in three scenarios, 2010 to 2025

7.1 Open Doors

| Occupation | Total growth (persons) | | Net replacement estimates (persons) | | Total job openings (persons) | |
|--------------------------------------------------------|------------------------|-------------|-------------------------------------|-------------|------------------------------|--------------|
| | ('000) | % | ('000) | % | ('000) | % |
| ANZSCO | | | | | | |
| 133 Construction, distribution and production managers | 58.4 | 43.0 | 77.4 | 57.0 | 135.8 | 100.0 |
| 312 Building and engineering technicians | 44.6 | 58.1 | 32.1 | 41.9 | 76.7 | 100.0 |
| 331 Bricklayers, and carpenters and joiners | 44.6 | 45.5 | 53.4 | 54.5 | 98.0 | 100.0 |
| 332 Floor finishers and painting trades workers | 23.2 | 53.7 | 20.0 | 46.3 | 43.3 | 100.0 |
| 333 Glaziers, plasterers and tilers | 21.1 | 53.8 | 18.1 | 46.2 | 39.1 | 100.0 |
| 334 Plumbers | 27.9 | 61.3 | 17.7 | 38.7 | 45.6 | 100.0 |
| 341 Electricians | 40.7 | 52.2 | 37.3 | 47.8 | 78.0 | 100.0 |
| 721 Mobile plant operators | 49.1 | 55.0 | 40.1 | 45.0 | 89.2 | 100.0 |
| 821 Construction and mining labourers | 46.9 | 66.5 | 23.6 | 33.5 | 70.5 | 100.0 |
| All occupations | 4,425.7 | 47.8 | 4,840.1 | 52.2 | 9,265.8 | 100.0 |

7.2 Low-Trust Globalisation

| Occupation | Total growth (persons) | | Net replacement estimates (persons) | | Total job openings (persons) | |
|--------------------------------------------------------|------------------------|-------------|-------------------------------------|-------------|------------------------------|--------------|
| | ('000) | % | ('000) | % | ('000) | % |
| ANZSCO | | | | | | |
| 133 Construction, distribution and production managers | 25.3 | 26.2 | 71.2 | 73.8 | 96.4 | 100.0 |
| 312 Building and engineering technicians | 28.5 | 48.6 | 30.2 | 51.4 | 58.6 | 100.0 |
| 331 Bricklayers, and carpenters and joiners | 24.1 | 32.9 | 49.0 | 67.1 | 73.0 | 100.0 |
| 332 Floor finishers and painting trades workers | 13.6 | 42.4 | 18.4 | 57.6 | 32.0 | 100.0 |
| 333 Glaziers, plasterers and tilers | 11.2 | 40.1 | 16.6 | 59.9 | 27.8 | 100.0 |
| 334 Plumbers | 16.7 | 50.9 | 16.1 | 49.1 | 32.7 | 100.0 |
| 341 Electricians | 24.0 | 40.9 | 34.8 | 59.1 | 58.8 | 100.0 |
| 721 Mobile plant operators | 29.5 | 44.2 | 37.3 | 55.8 | 66.8 | 100.0 |
| 821 Construction and mining labourers | 23.7 | 52.0 | 21.9 | 48.0 | 45.6 | 100.0 |
| All occupations | 2,892.9 | 38.8 | 4,561.3 | 61.2 | 7,454.2 | 100.0 |

7.3 Flags

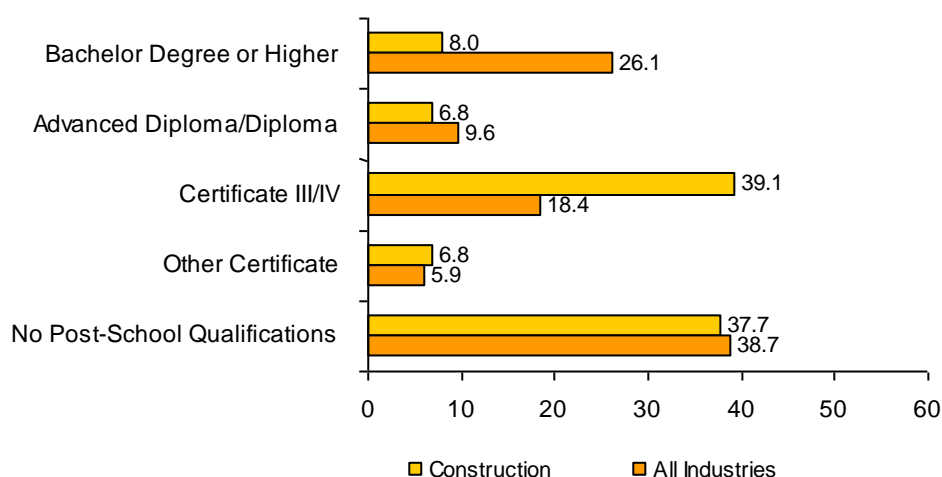
| Occupation | Total growth (persons) | | Net replacement estimates (persons) | | Total job openings (persons) | |
|--------------------------------------------------------|------------------------|-------------|-------------------------------------|-------------|------------------------------|--------------|
| | ('000) | % | ('000) | % | ('000) | % |
| ANZSCO | | | | | | |
| 133 Construction, distribution and production managers | 48.0 | 39.0 | 74.9 | 61.0 | 122.9 | 100.0 |
| 312 Building and engineering technicians | 29.8 | 49.7 | 30.2 | 50.3 | 60.0 | 100.0 |
| 331 Bricklayers, and carpenters and joiners | 16.9 | 26.6 | 46.8 | 73.4 | 63.7 | 100.0 |
| 332 Floor finishers and painting trades workers | 5.4 | 23.9 | 17.0 | 76.1 | 22.4 | 100.0 |
| 333 Glaziers, plasterers and tilers | 8.3 | 34.2 | 16.1 | 65.8 | 24.4 | 100.0 |
| 334 Plumbers | 6.2 | 30.3 | 14.3 | 69.7 | 20.5 | 100.0 |
| 341 Electricians | 22.6 | 39.7 | 34.3 | 60.3 | 57.0 | 100.0 |
| 721 Mobile plant operators | 23.8 | 39.5 | 36.4 | 60.5 | 60.2 | 100.0 |
| 821 Construction and mining labourers | 17.2 | 45.0 | 21.1 | 55.0 | 38.4 | 100.0 |
| All occupations | 1,681.7 | 28.1 | 4,297.2 | 71.9 | 5,978.9 | 100.0 |

Source: Access Economics (2009) *Economic modelling of skills demand*, Table D4 (ASCO); conversion to ANZSCO and net replacement demand by CEET (2009). Three-digit ANZSCO job titles are used in this analysis.

Education and training profile

More than twice the proportion of workers in construction (39 per cent) have completed a Certificate III or IV level qualification, as compared to all industries (18 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 (%)



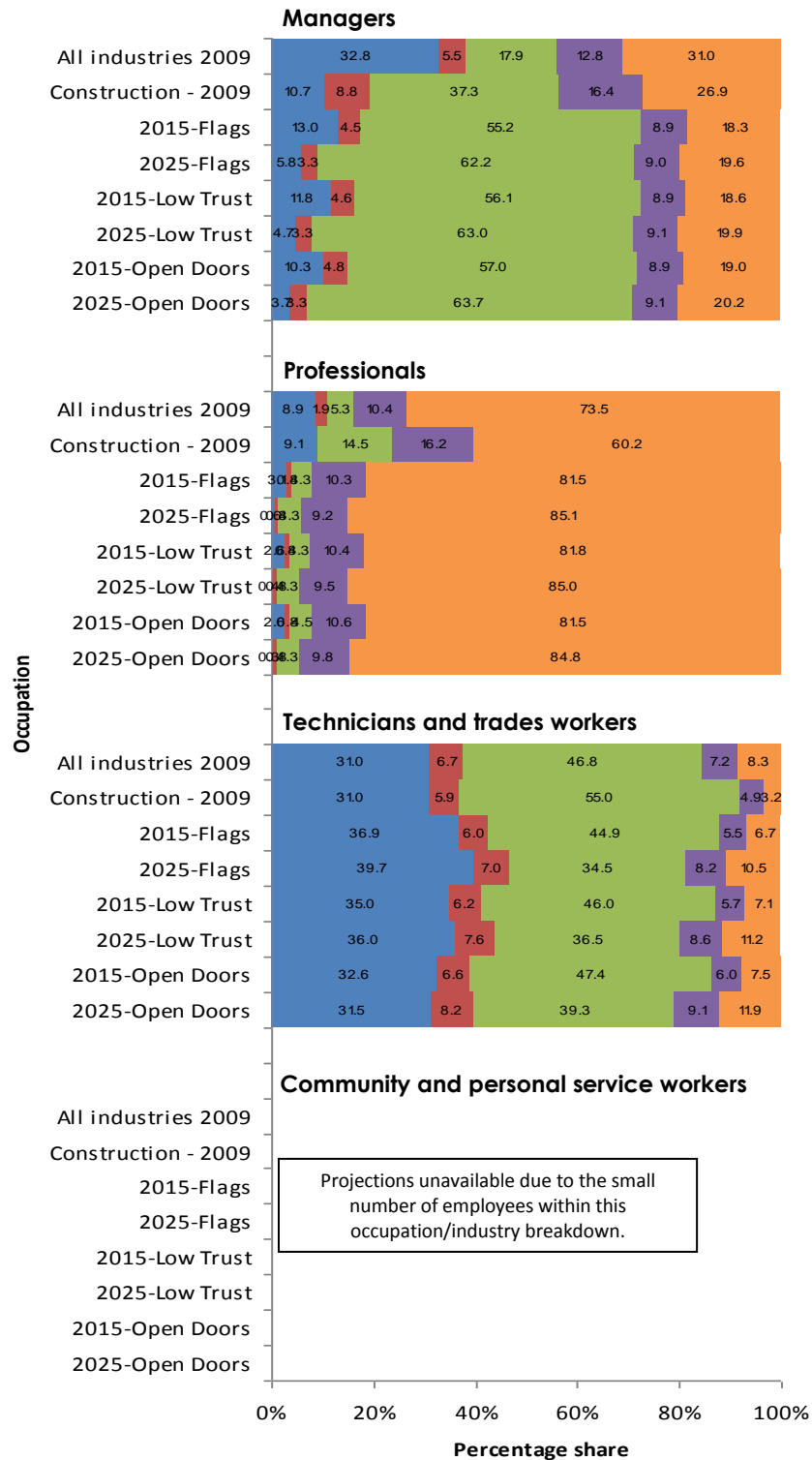
Source: DEEWR (2010) *Australian Jobs 2010*.

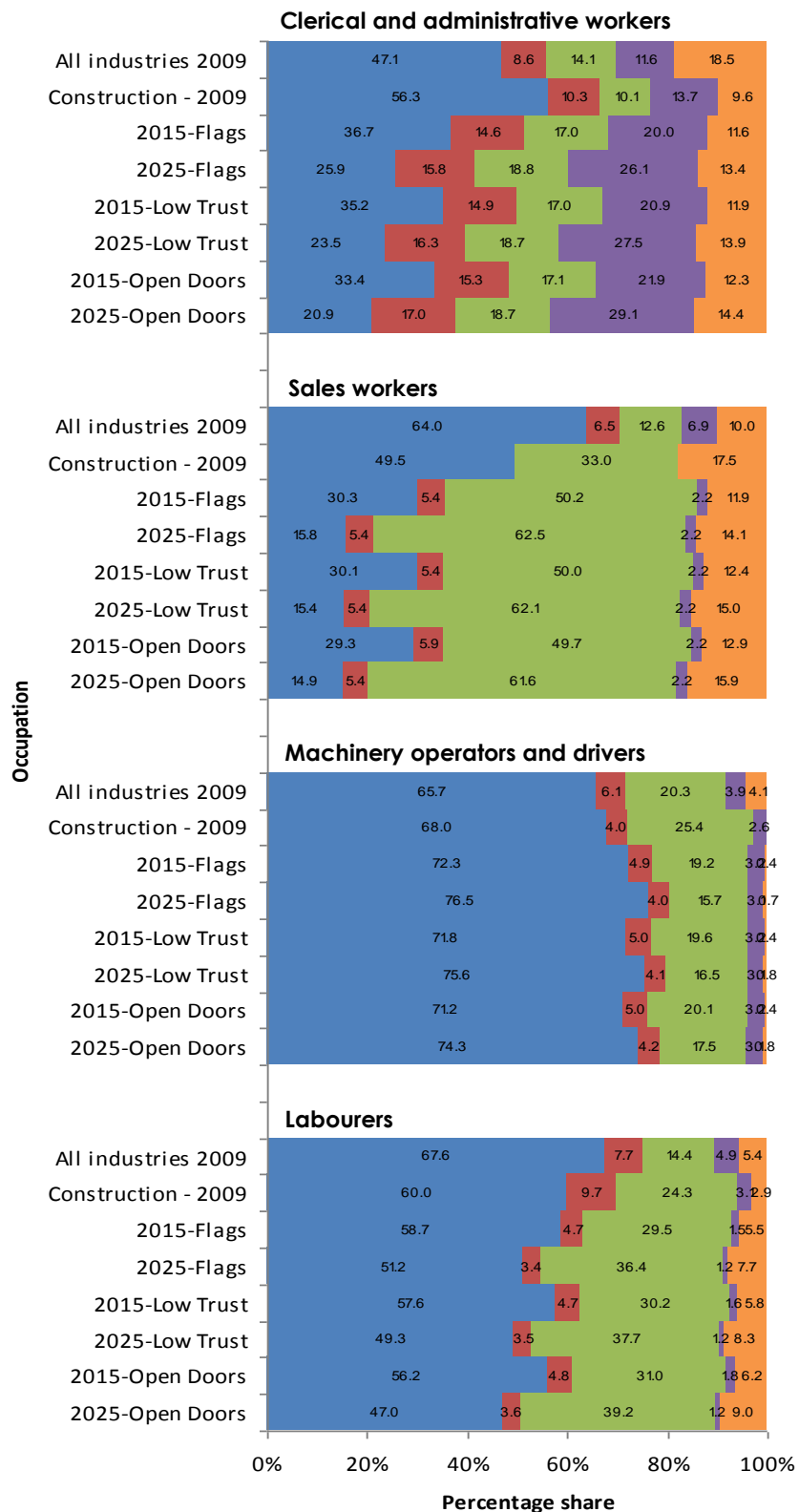
Figure 2 shows how demand for qualifications is expected to change over time. It shows the current education profile for each respective occupation: across all industries and within the construction industry. It then shows projected levels of educational attainment to 2015 and 2025 by each occupation group depending on which of the three scenarios eventuates.

As shown in Figure 2, the proportion of managers with a Diploma level or Bachelor degree or higher decreases over time in all three scenarios, however those with a Certificate III/IV increases by a similar proportion. However, the number of construction professionals with Bachelor degrees or higher is expected to increase by about 25 per cent across all three scenarios to 2025.

Under Open Doors, clerical and administrative workers (35.4 per cent) and sales workers (34.6 per cent) have the greatest decrease in the proportion of workers with no post school qualifications between 2009 and 2025. People in these occupations upskill progressively over time, with 33 per cent of sales workers holding a Certificate III/IV in 2009, increasing to 49.7 per cent in 2015 and 61.6 per cent in 2025 under the Open Doors scenario.

Figure 2 Mining industry by occupation and highest level of educational attainment, 2009 and projections to 2015 and 2025 (%)





Source: ABS (2009) *Survey of Education and Work 2009* (Cat. no. 6227.0).

Specialised occupations

In *Workforce Futures*, Skills Australia has proposed that national skills and workforce planning 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.

Specialised occupations associated with the construction industry include:

Construction managers
Land economists and valuers
Cartographers and surveyors
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 from *Australian Workforce Futures: A National Workforce Development Strategy* at http://www.skillsaustralia.gov.au/PDFs_RTfs/WWF_strategy.pdf.

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 (2010) *Australian Workforce Futures: A National Workforce Development Strategy*.