



Environmental Scan 2011

Building Capacity and Capability of Enterprises to Support
Workforce Planning and Development





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Executive Summary

Objectives

This Environmental Scan addresses the environment in which the Resources and Infrastructure Industry sector expects to operate in 2011.

This environment is comprised of:

- The Vocational Education and Training sector;
- The Australian economy; and
- The global economy.

The Scan is produced by Resources and Infrastructure National Industry Skills Council trading as SkillsDMC. Its content reflects input from and support of companies and representative bodies operating in Australia's resources and infrastructure industry which includes the Coal mining, Metalliferous mining, Quarrying, Drilling and Civil Infrastructure sectors.

Its purpose is to provide advance warning to key industry and government decision makers, policy developers, system administrators and funding agencies about the skilling needs of the sector that will allow it to capitalise on opportunities over the immediate future and for the longer term.

The data contained in this Scan is based on direct participation of companies operating in the Resources and Infrastructure Industries. As such, it is a sample, qualitative and could be subject to interpretation. However, in supporting the aim of predicting employment and skilling needs for the sectors that comprise the Resources and Infrastructure Industry – an industry that contributes 39% of the nation's exports and 8% of GDP while there is only access to suitable and relevant publicly funded training provision for 15,000 (or 0.9%) students enrolled being attached to the SkillsDMC areas of industry of the 1,706,700 students enrolled in publicly funded training – this forward looking approach is preferable to an historic extrapolation of data.

Key Messages

As noted by the Australian Bureau of Agricultural and Resource Economics and Sciences (*ABARES*) in its Australian Commodities: December quarter 2010 report, after sharp declines between mid-2008 and early 2009, prices for many minerals and energy commodities have strengthened.

Skills issues have again become critical for the resources and infrastructure sectors as demand for resources, such as gas, coal, iron ore and gold return to levels not seen since before the global financial crisis.

The Minerals Council of Australia predicts an additional 86,000 workers will be needed by the industry this decade in order to sustain its share of the global commodities market. Miners will need another 31,000 skilled tradesmen, 30,000 skilled operators and 9,000 industry professionals.

A report from the Queensland Resources Council (QRC) estimates that over the next decade the oil and gas sector, including coal-seam gas and liquefied natural gas industries will need to find 18,000 workers. A further 23,000 people will be needed by the Queensland coal, bauxite, copper, lead, zinc and gold industries with tradespeople, labourers and transport workers comprising the largest demand.

The Civil Contractors Federation notes that the booming mining industry is luring skilled workers away from building infrastructure, threatening a shortfall of "many thousand" by 2012.



The previous focus of resources and infrastructure industry sector companies operating in an environment of lower levels of production has been reversed with new focus now concentrating on the size and profile of their respective workforces in an environment of increasing levels of production.

This has brought to the fore the issues surrounding workforce planning against projected activity and has raised concerns of the ready availability of Registered Training Organisations with the capability and capacity to deliver training in locations that meets the needs of the industry. The resources and infrastructure industry sectors do not generally use publicly funded programs. This relates to the inflexibility of the training system in servicing industry sectors which mainly operate out of remote and regional areas.

In a submission responding to the government's proposed economic development strategy, a major employer in the Mining Sector argued that governments at all levels need to play a more significant role in supporting indigenous communities, in partnership with industry and the local communities. The submission went on to note that the TAFE system and the training it offered was not aligned to local employment and industry needs and called for a review of the TAFE funding model so that training opportunities were not driven solely by class sizes.

Over the past twelve months, the Australian and world economies have been recovering from the effects of the 'Global Financial Crisis' (GFC). During and immediately after the time of the GFC, it was difficult to be optimistic about the future amid rising unemployment, limited credit and a long list of insolvent financial institutions in Australia and overseas. Fortunately, Australia was not as adversely affected as many other countries and the resources and infrastructure industry has been at the forefront of Australia's recovery. The continual improvement of business conditions in 2011 will allow these sectors to prepare for and address workforce needs.

On 1 September 2009 the Australian Government announced the establishment of the National Resources Sector Employment Taskforce to help secure the skilled workforce required to build and operate major resources sector projects through to 2014. In July 2010 the Taskforce reported to the Commonwealth Government. The Report included a set of Recommendations for governments, the resources sector and stakeholders to address critical skills needs and plan for future growth. These recommendations set a solid direction for the future and should be taken forward in recognition of the analysis that comprises the remainder of this Scan.



Identified Workforce Development Needs

Background

While SkillsDMC does not provide direct, recognised training provision, a range of quality services and products has been identified to enable SkillsDMC to assist and meet enterprise workforce planning and development requirements in streamlined, strategic and cost-effective ways.

SkillsDMC recognised the need to have workforce planning and development systems in place for enterprises in the resources and infrastructure industry which are not complex or costly, but are:

- Easy to use;
- Have useful information on tap;
- Give information that allows priorities to be set; and
- Measure and report progress.

SkillsDMC has put together a rigorous, systematic approach to workforce planning and development which meets the above needs. SkillsDMC staff is trained in how to consult with enterprises and assist them to implement these systematic approaches. The starting point is these basic definitions:

- **Workforce Planning** is the management of employee numbers, now and into the future; and
- **Workforce Development** is the management of employee skills, now and into the future

SkillsDMC has developed the powerful online Skills Maximiser™ workforce planning and development tool that will allow enterprises to achieve this while seamlessly contributing to aggregated industry workforce intelligence gathering and reporting. Through the use of Skills Maximiser™, SkillsDMC can assist and empower an enterprise to:

- analyse and understand workforce needs;
- build workforce skills and capability;
- forecast future workforce needs, including developing different future scenarios and assessing their impact on the business;
- produce and review workforce planning and development strategies; and
- integrate these into the enterprise's overall strategic business planning and management.

In summary:

SkillsDMC provides workforce planning and development services **FREE** of charge to enterprises.

The Skills Maximiser™ can be used:

- to set up workforce planning and/or development systems in an organization;

OR

- as a specific-purpose tool (for analysis, scenario planning, problem solving, reporting) to support existing systems.

**Workforce issues?
Skills Maximiser could be the most valuable tool on site.**

To meet your business objectives, you need to be across the skills needs of your current – and future – workforce. SkillsDMC is the industry skills council for the drilling, mining, quarrying and rail infrastructure sectors. So, it's our job to help you meet both your skills objectives and prepare for your future workforce needs. We want to ensure that these goals are achieved efficiently and economically.

In fact, that's exactly why we developed the Skills Maximiser™ tool.

Web-Based Tool
The Skills Maximiser is a web-based tool to help you understand your workforce skills needs. It provides a clear view of your current workforce skills and identifies the skills gaps you need to address. It also provides a clear view of your future workforce skills needs and identifies the skills gaps you need to address.

Skills Development Strategy
The Skills Maximiser will help you develop a clear and actionable skills development strategy. It will help you identify the skills gaps you need to address and provide you with a clear view of the skills development actions you need to take to address these gaps.

Your Current Workforce
The Skills Maximiser will help you understand your current workforce skills and identify the skills gaps you need to address. It will also provide you with a clear view of the skills development actions you need to take to address these gaps.





The aggregated reports and graphs listed in the following pages indicate the expected growth in the resources and infrastructure workforces provided by the participating organisations. It is important to note that this data is in real-time and relates to expected production and business activity of the participating organisations.

This aggregated data provides SkillsDMC, the industry and decision makers, policy developers, system administrators and funding agencies with an early warning system based on real-time industry intelligence. Industry feedback highlights workforce planning as the highest priority for enterprises to avoid skills shortages. The SkillsDMC Skills MaximiserTM is the industry-derived workforce planning instrument designed to gather enterprise demographics directly related to current and future business activity.



Drilling Sector Workforce Planning Analysis

The majority of the companies engaged this year represents those who operate in a number of states, expanding from representation specific to the state where they are based. This expansion now includes a company structure that allows them to be able to draw on their international resources and knowledge.

The majority of work being conducted by the engaged companies is occurring in Western Australia, the Northern Territory, New South Wales, Queensland and Victoria. This work is for the most part undertaken on a contract or project basis, with the length of the projects varying greatly.

The types of drilling projects and services undertaken cover numerous sectors and fields including:

- Coal seam gas (CSG) production wells;
- Vertical drilling for exploration and mine services;
- Underground directional drilling for coal mine methane (CMM) drainage and in-seam geological exploration;
- Surface to in-seam (SIS) drilling up to 2800m for CMM drainage and CSG production;
- Horizontal directional drilling (HDD) for wastewater, gas and infrastructure installations;
- Geotechnical investigation drilling for mine and other underground development;
- Environmental investigation drilling for research and remediation planning;
- Steering and drilling engineering services for feasibility studies, improving drilling efficiency, torque and drag analysis, maximising gas flows and geological modelling;
- Well services – for completion, monitoring and design to establish and maintain coal seam gas wells;
- Contract mining;
- Blasting;
- Exploration drilling;
- Supply and logistics;
- Geotechnical;
- Marine;
- Engineering;
- Construction;
- Environmental investigation;
- Sampling;
- Supporting infrastructure development (mining and civil); and
- Waterwell.

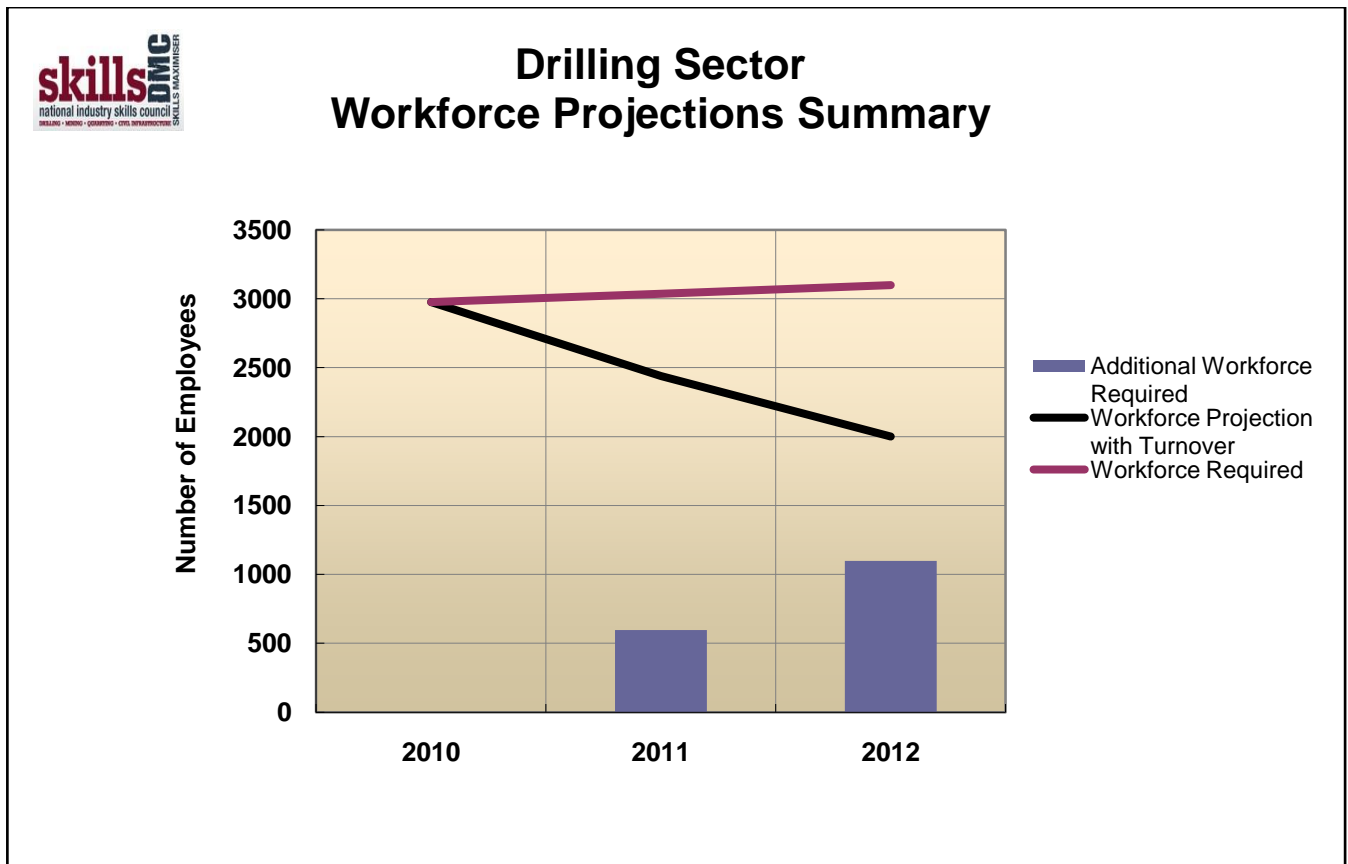
All of the companies engaged are self-supporting, in that they are responsible for the maintenance of their equipment, have their own support vehicles (fuel trucks, floats, light vehicles etc) and often have the capability for engineering and completing modifications to equipment to suit the working environment and/or client needs.

Head Offices for the engaged companies are mostly situated in metropolitan areas. These facilities also include workshops/depots where drill rigs can be maintained and modified if needed. Several of the companies also have depots that are closer to the main areas of operation so that rigs can be maintained or repaired with a minimum of down time being incurred.

Most of the engaged companies operate in isolated and even remote locations either on a 1 x 12 hour shift per day or 2 x 12 hour shifts. This reinforces the general knowledge within the industry that drilling is isolated work. The majority of crews work as independent teams, with supervisors, trainers and health and safety personnel conducting regular visits to sites.



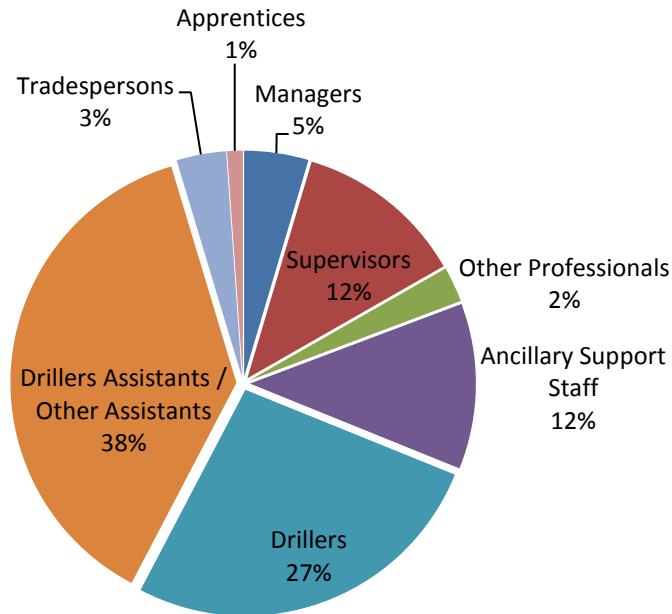
In terms of international economic conditions, while the Australian economy has performed well in light of the global financial downturn, and while commodity prices continue to rise, business investment remains cautious. The continued growth in Asia, in particular China, indicates a continuing strong demand for bulk commodities. Drilling companies who were engaged with large national or international production companies were not as negatively affected as those drillers who were contracted by smaller, nationally based production companies. Despite this set back, the majority of companies engaged reported that they would most likely be expanding their operations in the near future.



On a state level, demand will vary as drilling companies are not responsible for the production of any singular commodity. For example in Western Australia, the call for exploration drilling is increasing as producing companies gear up for stronger resource performance. On the other hand, work on the eastern seaboard is likely to result from activity generated by infrastructure needs in relation to new civil works, residential and commercial construction. The recent natural disasters in both Queensland and Victoria, and to some extent New South Wales, may also have an impact on the services for geotechnical, waterwell and other related types of drilling projects.

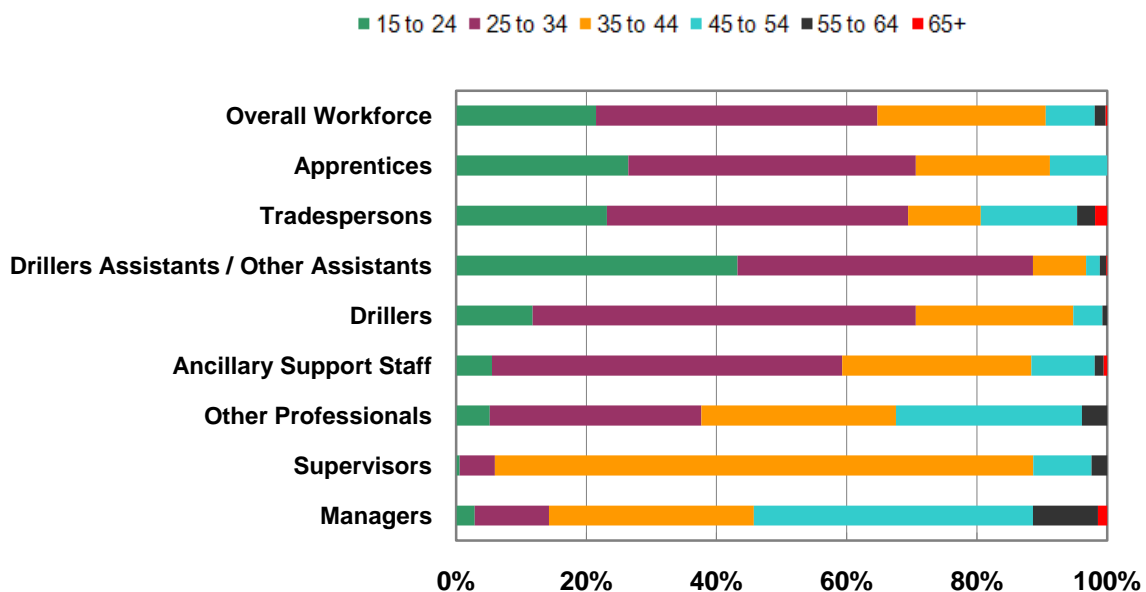


Drilling Sector - Occupations Breakdown



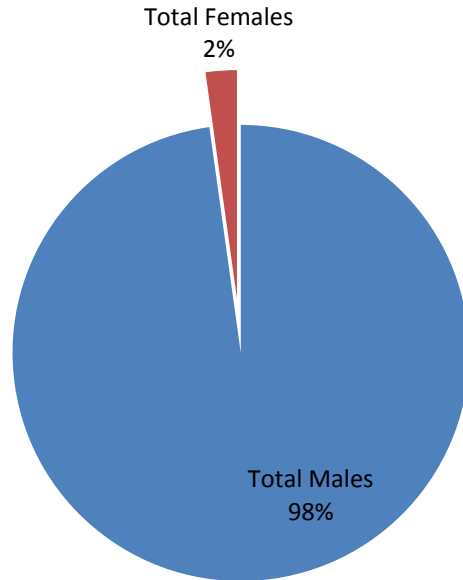
The average median age of the drilling workforce, reported by engaged companies where the information was available, is roughly 39-40 years. The majority of engaged companies reported a significant number of young employees. What this figure does not capture is the indication by companies that drillers usually do not stay in the industry until retirement age.

Drilling Sector - Workforce Age Profile by Occupation



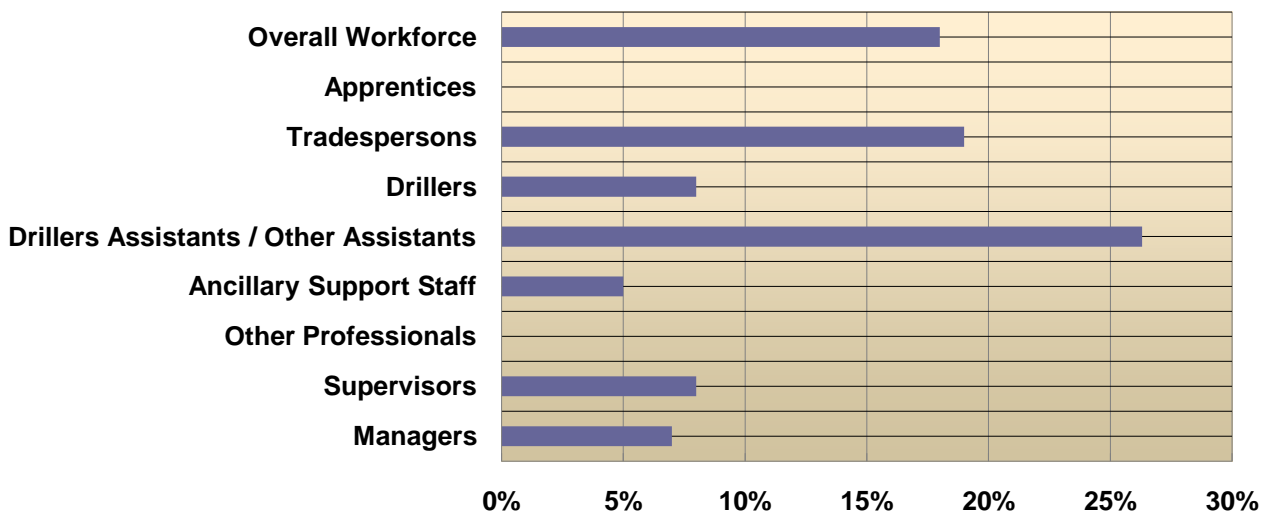


Drilling Sector - Gender Breakdown



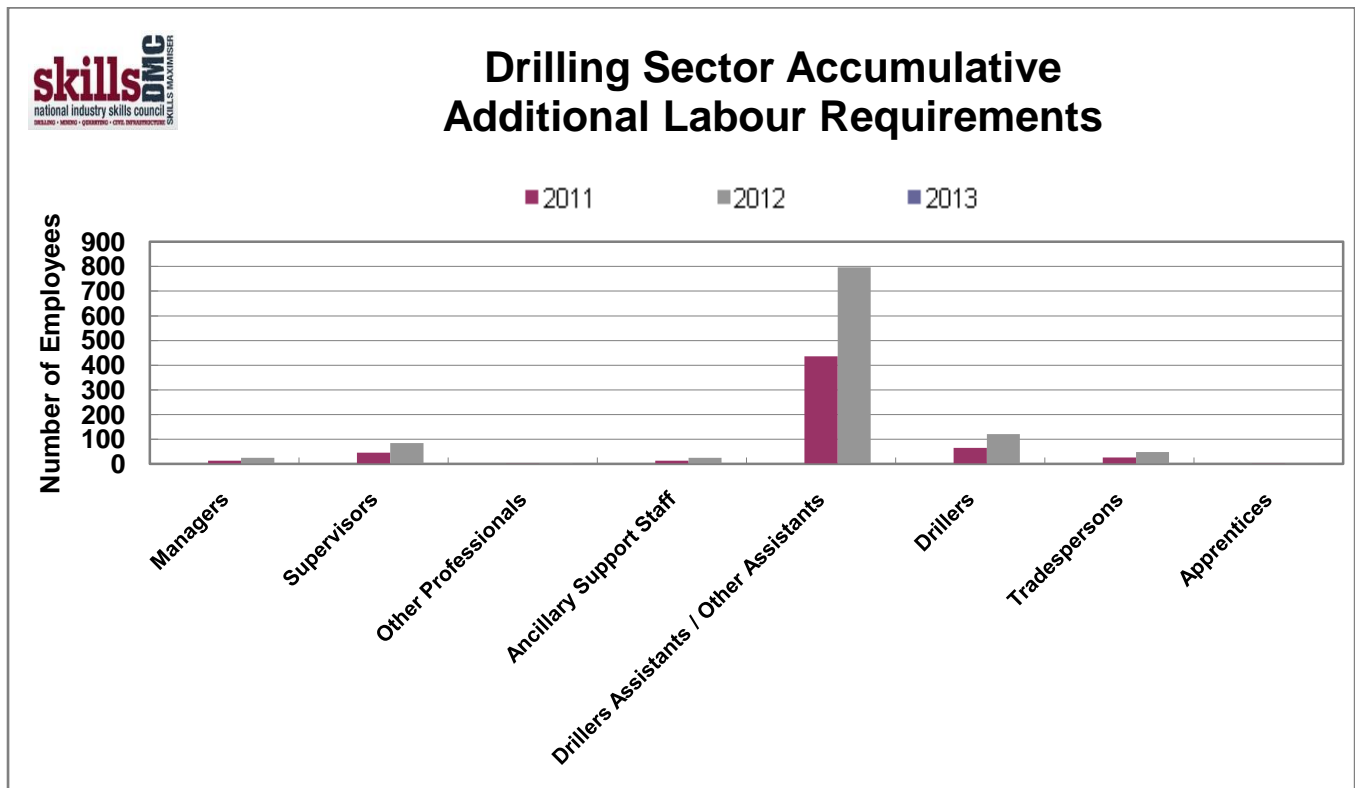
Turnover figures ranged up to 26%. In all cases, the area with the highest turnover figure was driller's assistants/other assistants. This information reflects the sentiments of companies who have experienced difficulty in recruiting and retaining drillers on staff. A number of organisations further cited that the mining industry and coal seam and gas sectors were a lure for drillers in terms of remuneration and career pathways.

Drilling Sector - Workforce Turnover %





All engaged companies reported an expansion in their workforces. However figures were not available for all companies.



The majority of engaged companies were in the early stages of offering nationally recognised qualifications to their employees, with few companies recording that they worked with a Registered Training Organisation. It was also reported that the majority of training within the industry was completed on site by in-house trainers. This could be due in part to the differing specialisations of the companies and the operations that they undertake. All companies stressed their focus on safety training and the importance of this being rigorous and of a high level.

Workforce development drivers for the engaged companies were fairly consistent:

- The need to recruit and then retain quality personnel suited to the demands of the job;
- Lack of experienced drillers (in all types of drilling, and across the states);
- Competition presented from the mining, exploration and coal seam gas sectors for drillers and driller's assistants;
- Responsibly dealing with the rapid demand for services (and the impact of the lack of experienced drillers, training etc);
- The knowledge that a period of unprecedented growth (especially in the coal seam gas sector) is fast approaching, if not already here; and
- The need to keep training at comparable levels (that is, between existing workers and new employees).



Recommendations formulated by the engaged companies in conjunction with SkillsDMC input were similar, and are listed below. It needs to be stated that there were numerous other recommendations presented, however some were specific to operations, location and individual company needs and have therefore not been included. The recommendations were:

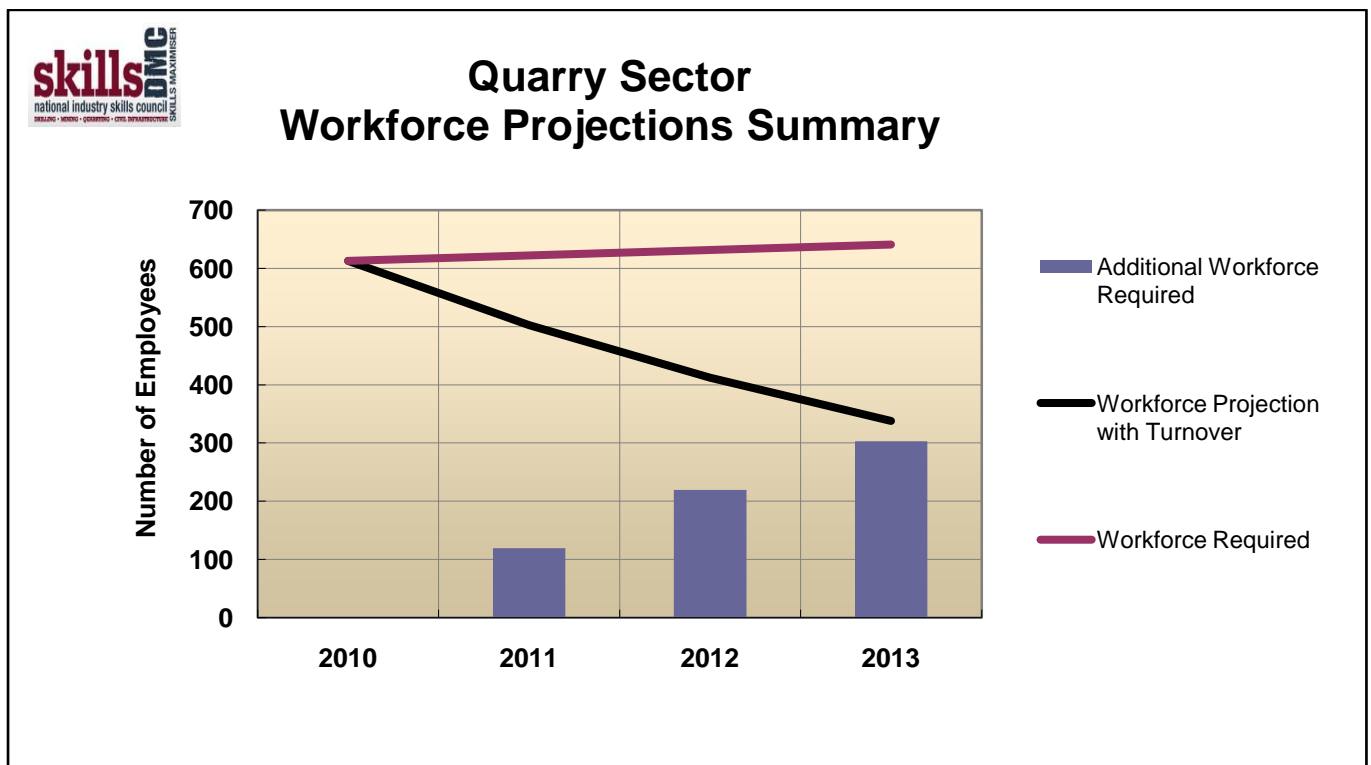
- Identify and then address skills' gaps within the workforce effectively;
- Investigate the high rate of turnover and develop targeted strategies for the retention of employees, particularly drillers and driller's assistants/trainee drillers;
- Access available sources of funding;
- Prioritise training needs and roll this training out in a planned and methodical way;
- Develop strategies to improve retention rates so that the focus could be more on employee development and less on employee recruitment and replacement;
- Upskill existing workers (possibly through the offer of nationally recognised qualifications);
- Develop and utilise clearly identifiable career pathways for younger employees entering the industry;
- Implement strategies for the Recognition of Prior Learning of existing workers;
- Train for expansion requirements in the future;
- Use site specific competency based assessments to build capability and meet business performance needs; and
- Regularly review overall training strategies.



Quarry Sector Workforce Planning Analysis

Data was collated from 31 national quarry organisations, including an estimated 116 quarry sites and 1,164 employees. The majority of quarry operations are small with 10 employees or less at each site. Many quarries operate with two to four staff and employ contractors to provide periodic services such as drilling, blasting and maintenance.

Sector forecasts depend on the number of contracts and civil projects awarded through the Federal Government's stimulus package. Production requirements are expected to remain consistent over the coming years in quarry markets such as Civil Grade Aggregate, Gravel, Sand, Dimensional Stone and Agricultural Limestone. Quarry sector jobs were down by 20-25% in 2009-10. This sector will need to recover these jobs in addition to the jobs that will be required to meet the future demands of the industry. The impact of the next 18 months of the downturn will be that the quarry sector workforce requirements will be higher than that of the other sectors within the resources and infrastructure industry.

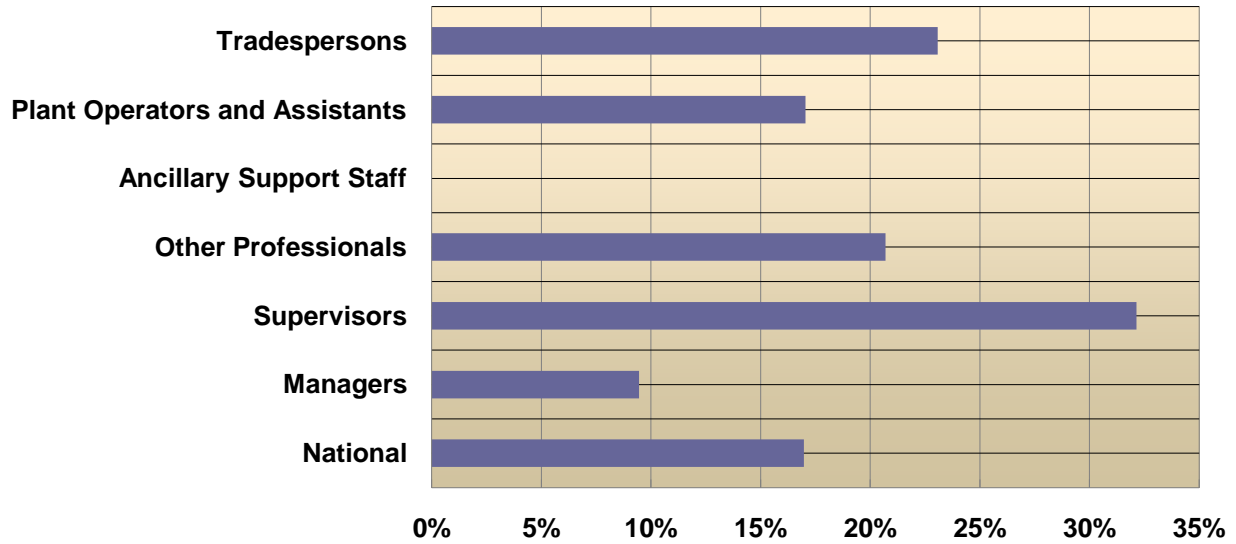


Turnover, Retention and Recruitment

Turnover ranged from a low of 0% for Ancillary Support Staff, where the workforce is very stable, to a high of 33% for Supervisors. Higher level positions are difficult to fill, particularly during periods of high demand with some vacancies remaining open six months or longer.



Quarry Sector - Workforce Turnover %

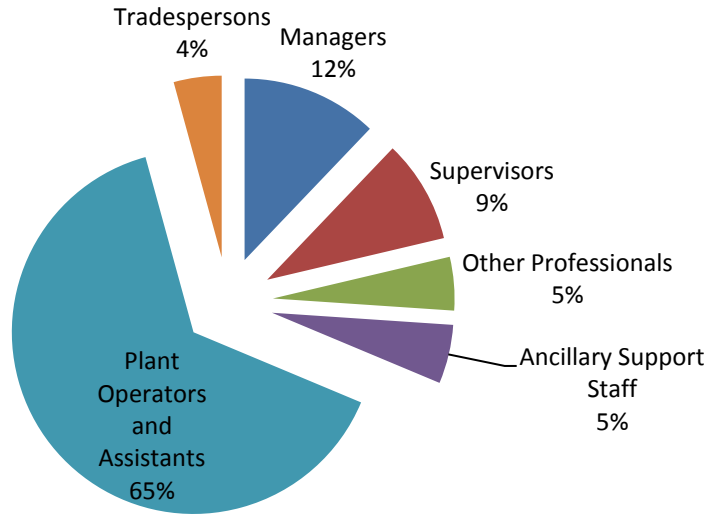


Workforce Profile

Employment in the quarry sector is dominated by operational roles such as plant/equipment operators and assistants (65%). The remaining workforce is made up of managers (12%), supervisors (9%), support staff (5%), other professionals (5%) and tradespersons (4%). The less than 1% of Trade Apprentices, coupled with the almost 23% turnover of Trade persons, indicates the need for skills in equipment services. This may result in a further reliance on contractor arrangements.



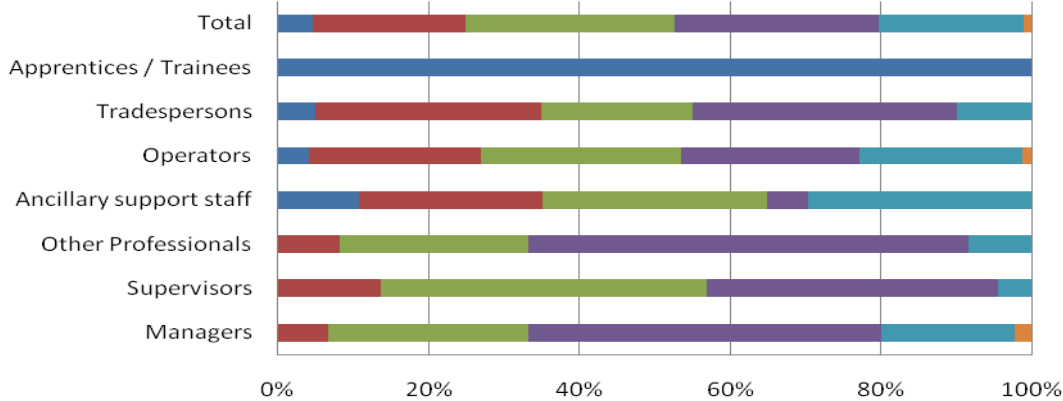
Quarry Sector - Occupations Breakdown

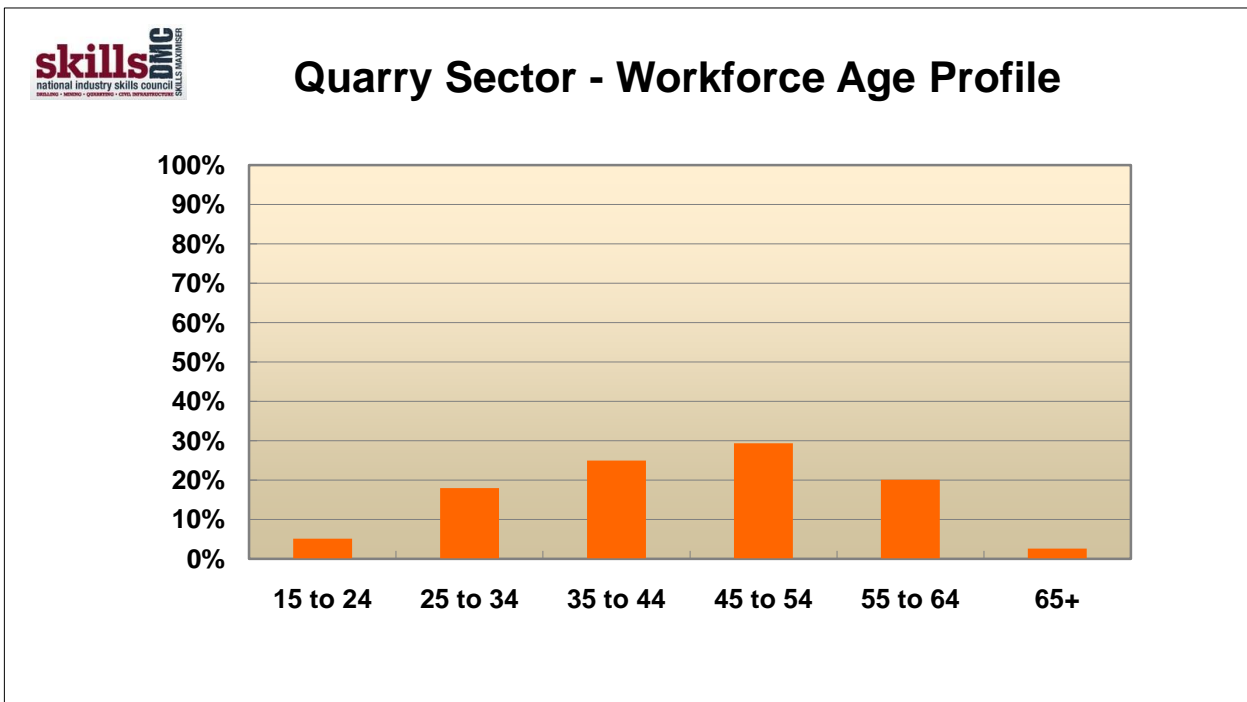
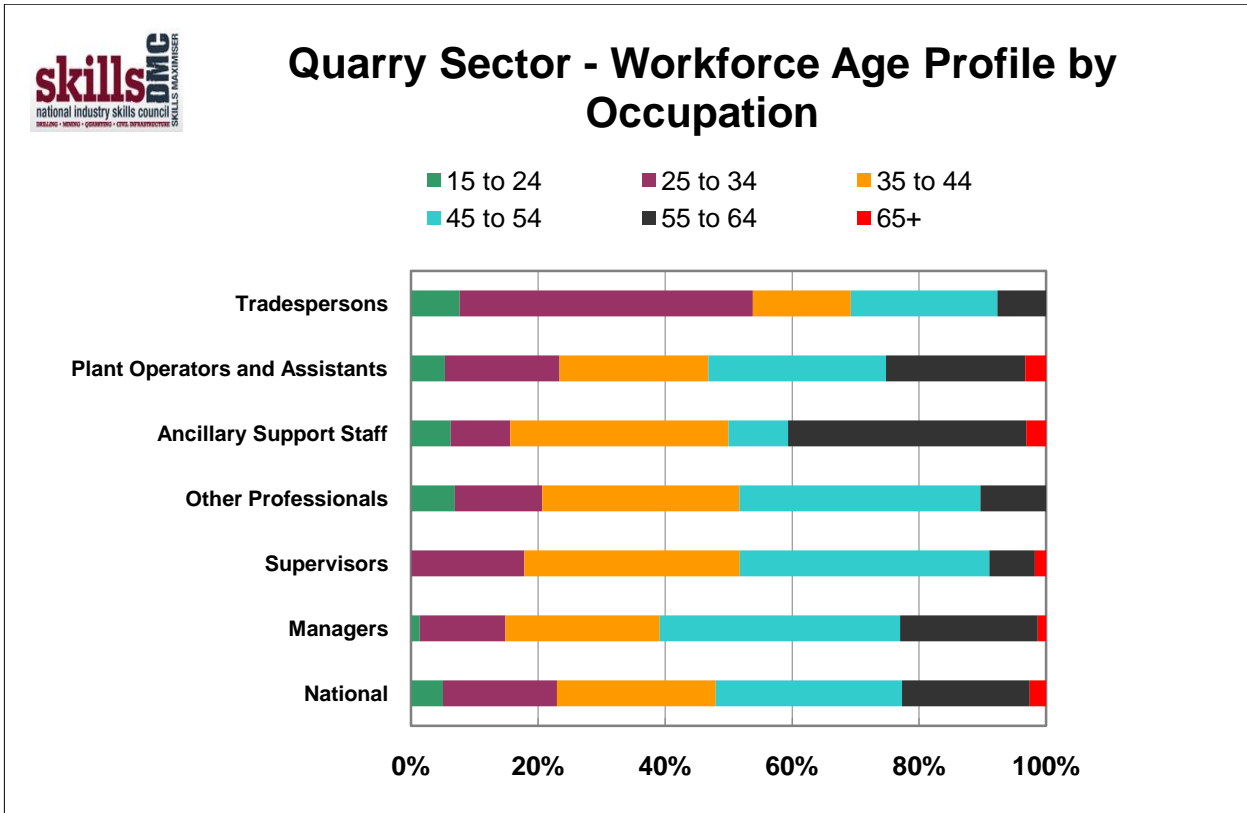


The sector's ageing workforce will pose significant recruitment issues for attracting the next generation of employees if it continues to move toward the older end of the scale which has occurred at many of the smaller sites.

Quarry Workforce Age Profile

15 to 24 25 to 34 35 to 44 45 to 54 55 to 64 65+





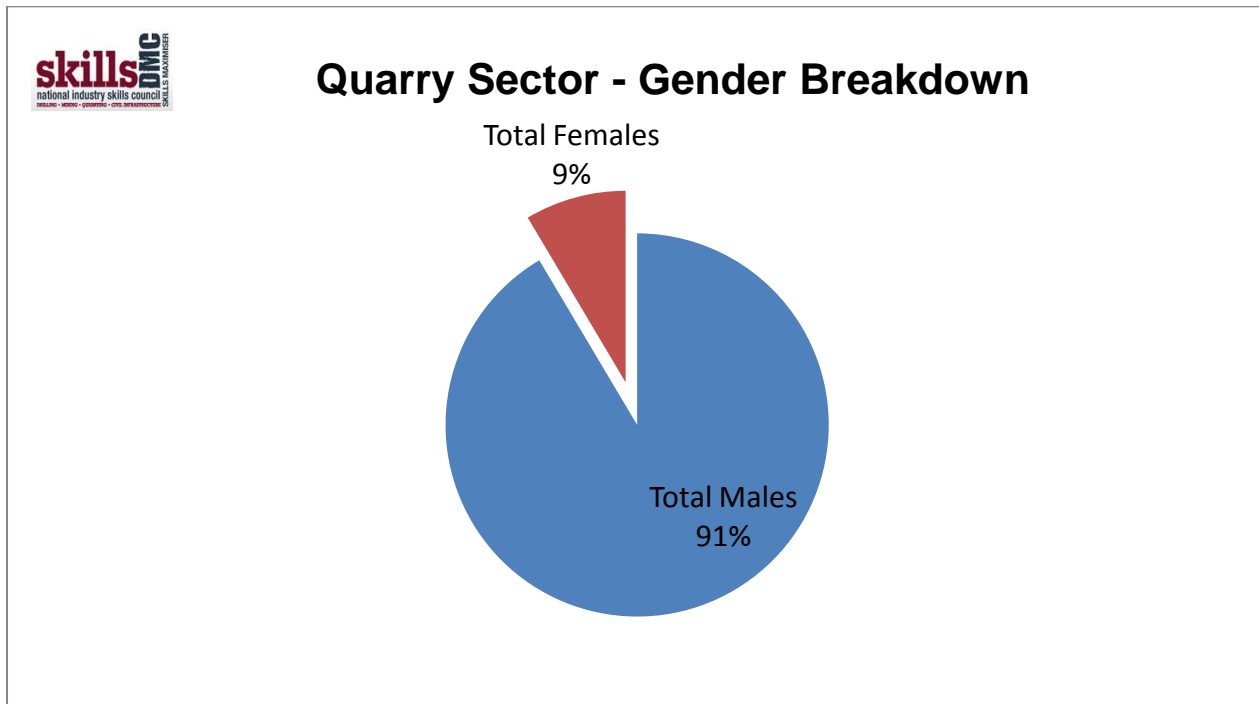
The major challenge for the quarrying is attracting employees to the sector as a viable career path, particularly during times of increased demand. It has also become a resource to other sectors that look to employees with the same skills sets.

To increase awareness of careers in quarrying, the Certificate I in Resources and Infrastructure Operations is being used in some regional areas as an introductory qualification based on Quarrying and Civil Operations.



Gender Breakdown

Increasing female employment may be part of the local workforce solution. While the quarry sector's workforce is predominately male, the redesign of quarry equipment and the introduction of new technologies in the areas of manipulation of heavy equipment may attract female personnel at operational levels. This redesign of plant and equipment will need to be accompanied by cultural, infrastructure and work organisational changes as well. For example, industries currently utilising 10 hour shifts will have difficulty recruiting mothers with young children.



Training and Development

The nature of quarrying operations and workforce size requires employees to be multi-skilled across roles and job functions.

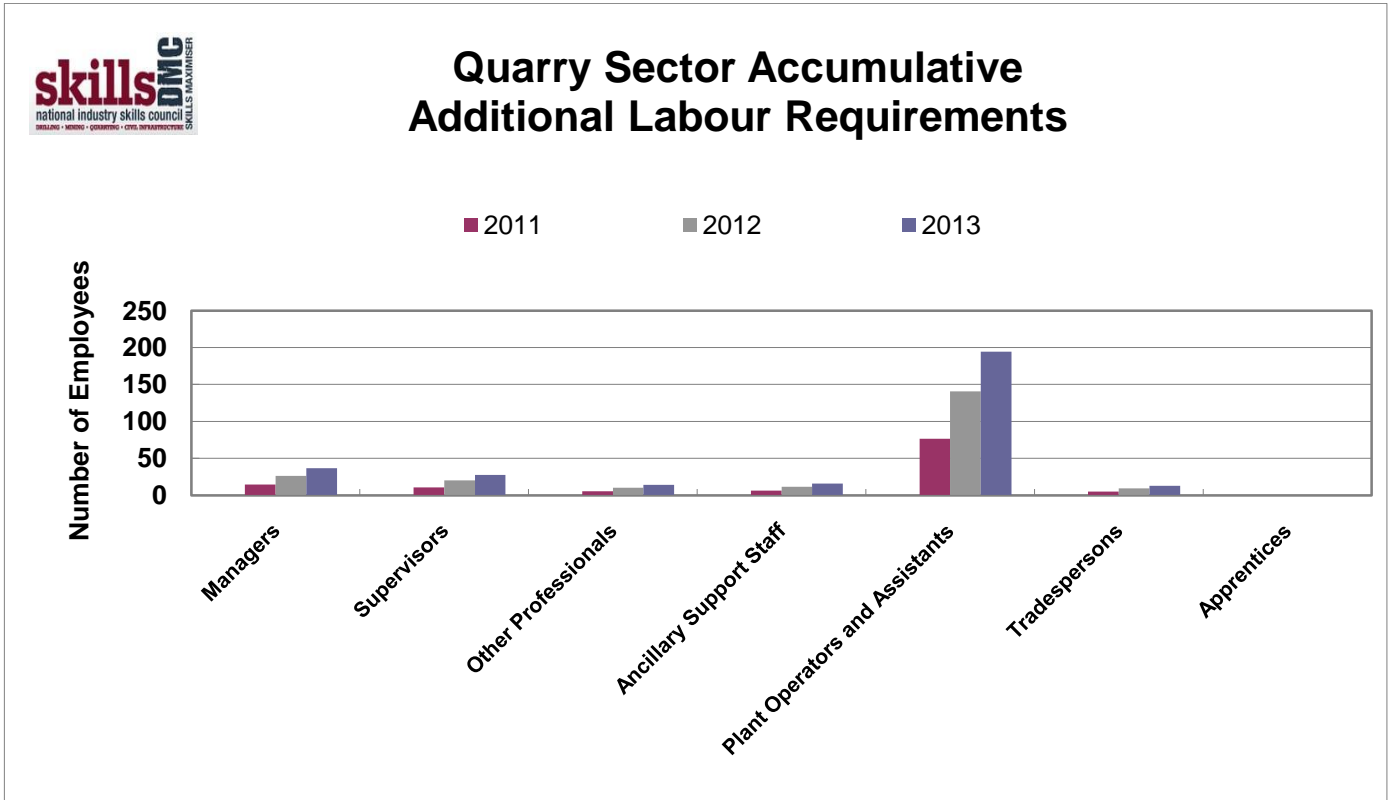
On-the-job training is necessary to meet site-specific operational competency of plants and equipment. Tickets and/or licenses usually need to be completed to meet regulatory requirements. The sector has recently introduced the use of Contracts of Training, formalised competency assessments and training programs, predominantly with the larger enterprises. These organisations have also adopted the Certificate III level as a benchmark for plant and operations. Data indicates over 50% of employees have yet to be assessed at this level.

Substantial change is occurring in the quarry sector. Environmental management in line with community expectations and engagement with the community are critical for the well being of the quarry sector. Another area of change is the emergence of the re-use of construction materials.

The downturn in business and government building activities brought on by the Global Financial Crisis has severely hit the quarry sector, civil infrastructure and general construction sectors. Indications of positive growth in these sectors and the need for all quarry products as more projects start up are required. As other related industry sectors gather pace, industry stakeholders are concerned that sectors experiencing growth will utilise financial inducements to attract some of their experienced staff.



With a national workforce of between 30,000 and 35,000 people and an age skew above the national average, data indicates the quarry sector will require additional personnel over the next three years.





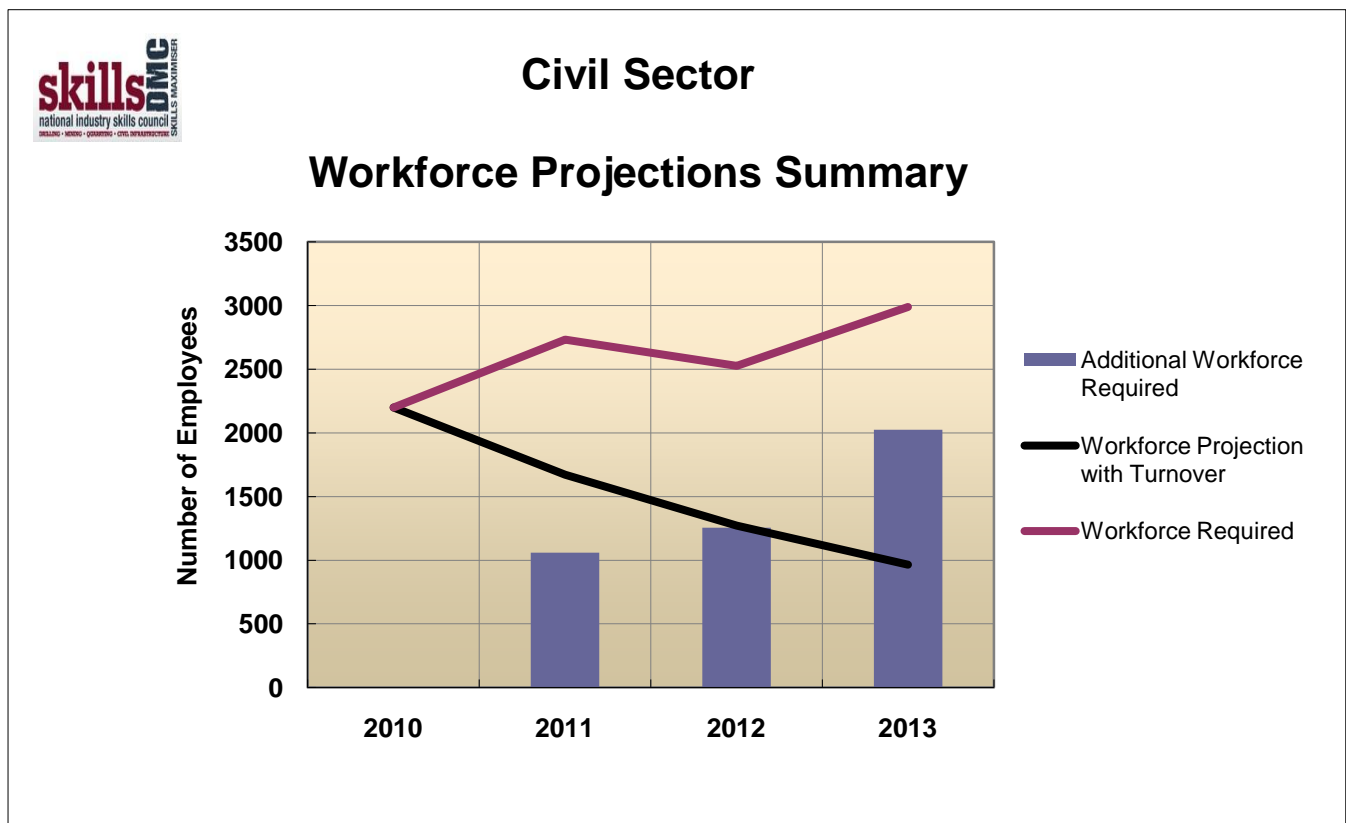
Civil Sector Workforce Planning Analysis

Civil Infrastructure companies vary from one person, owner-operated arrangements to medium sized operations of multi-disciplined professional consultants providing specialist engineering services, up to large national organisations with workforce numbers in the thousands.

Governments are committing substantial funds to building civil infrastructure such as roads, ports, bridges and rail, as well as opening up new sub-divisions and maintaining existing structures. Infrastructure is a key component of the national productivity agenda.

The Civil Construction Industry plays a pivotal role in the ongoing infrastructure development throughout the States and Territories.

Investment by the Commonwealth, State, Territory and Local Governments into infrastructure development places increasing demands on the Civil Construction Industry to deliver services across a broad range of projects and locations. As a result, there will be an increasing demand for skilled workers to take up additional civil construction work, as well as filling vacancies resulting from turnover and natural attrition.



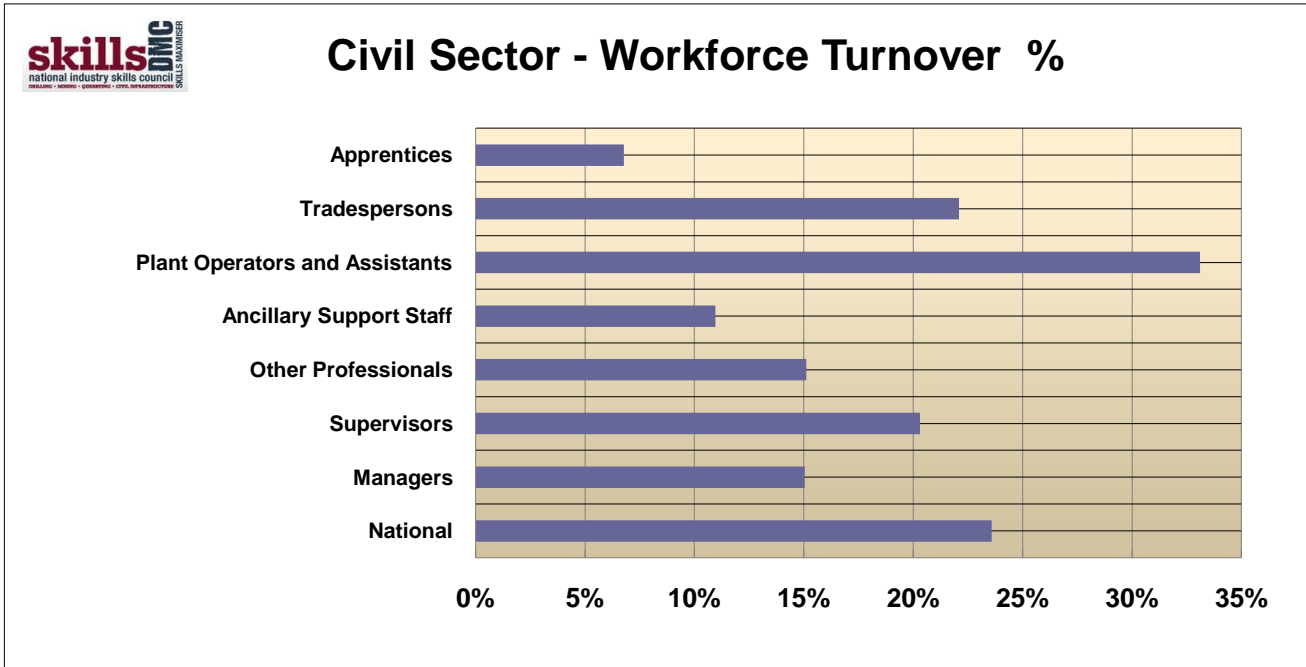
Moving through the economic downturn, civil companies had taken on a greater number of smaller projects in order to maintain revenue and now are returning to larger projects where clients are confident in committing more dollars.

The contract nature of the industry and diverse locality of projects means that companies are continually moving crews and equipment to projects and locations as required.

It is common to hear that it can take up to 10 years on the job experience to become or be considered skilled in operation occupation within the civil infrastructure sector.



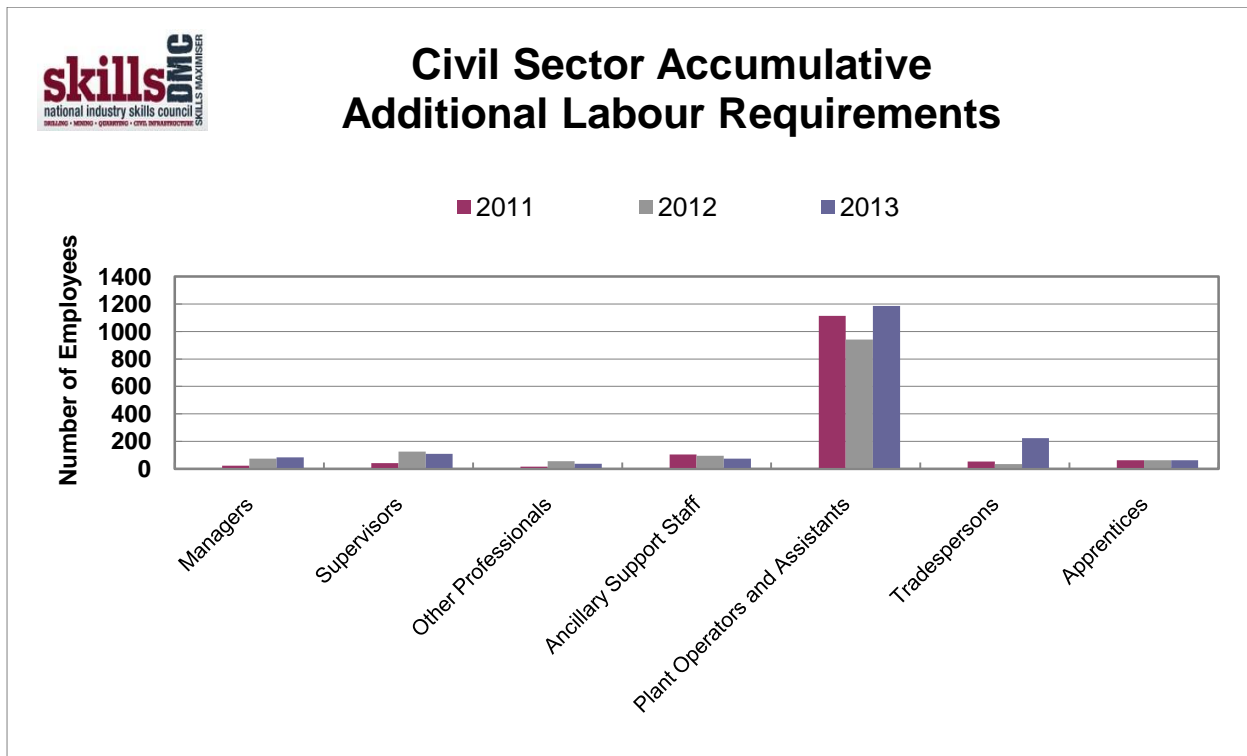
Innovative companies are seeking to remain competitive through use of technological advancements in equipment and processes including business and communication activities in relation to time and cost savings. The companies believe this approach supports their focus on safety issues, continued quality improvements and provide an ongoing training commitment for all employees.



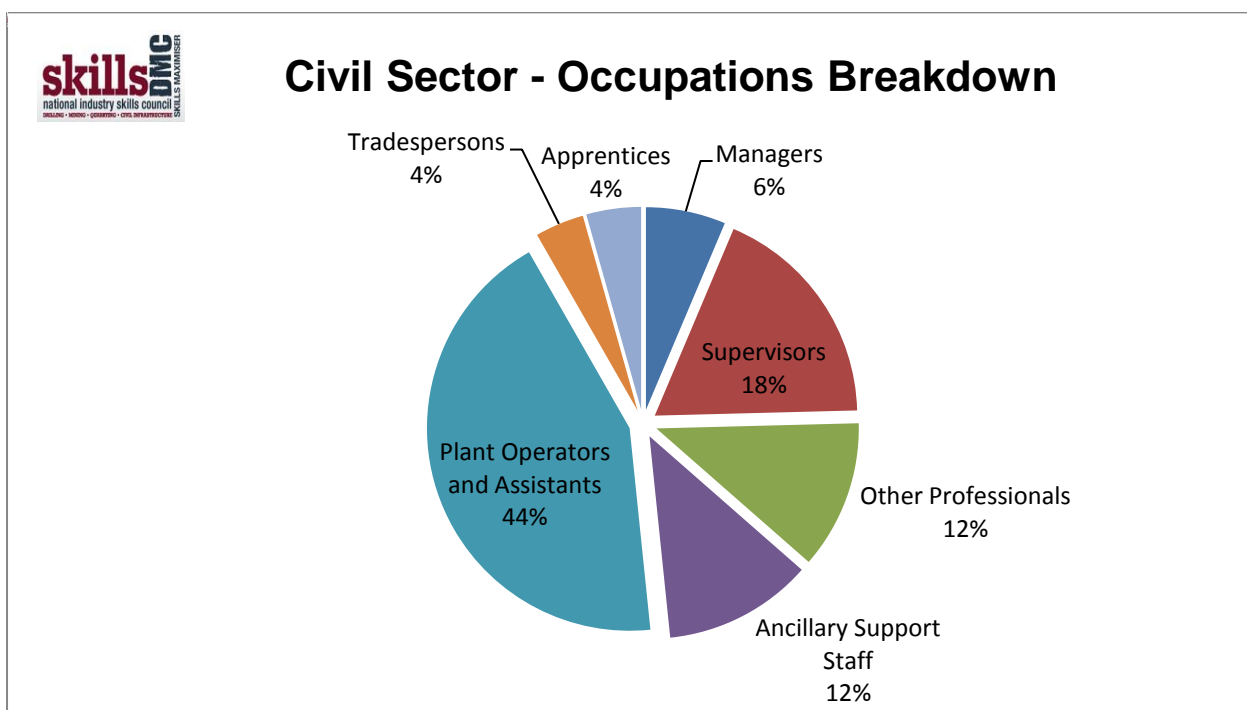
Forecasting the required number of employees in the resource sector to meet industry plans can be calculated using several input factors related to sites, equipment and crewing arrangements. Production output is not necessarily the appropriate measure as changes to output can often be accommodated within the flexibility of workforce hours and rosters.

The complex nature of civil sector operations, diversity of projects, the short term nature of projects and the need to stagger project components means that forecasting workforce numbers in most instances is done using a single measure of project values in dollar terms.

Many of the employees who contributed to turnover figures (coming out of the downturn) were recruited and found to be unable to sufficiently match the needs and/or skills of the industry.

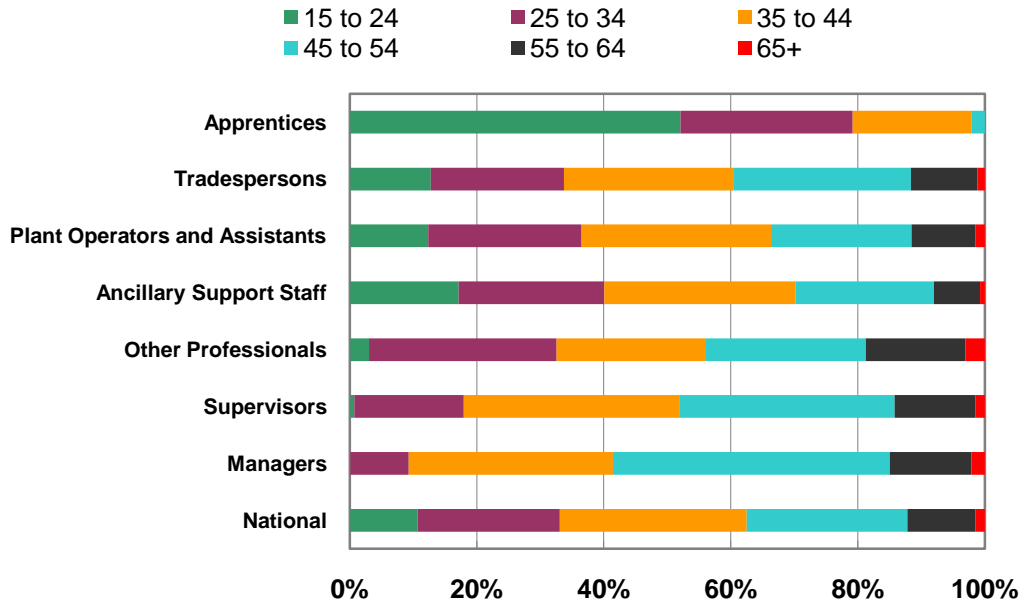


Indications from industry stakeholders show that skilling issues in the Civil Construction Industry are complex. As a general point, the range of occupations within civil construction is very broad – civil construction skills support a range of other occupations and areas of activity. Key areas of operation include bridge construction, road construction, pipe laying and the operation of a wide variety of large and small plant equipment. Additionally, plant hire and civil engineering project management have become significant areas of activity.

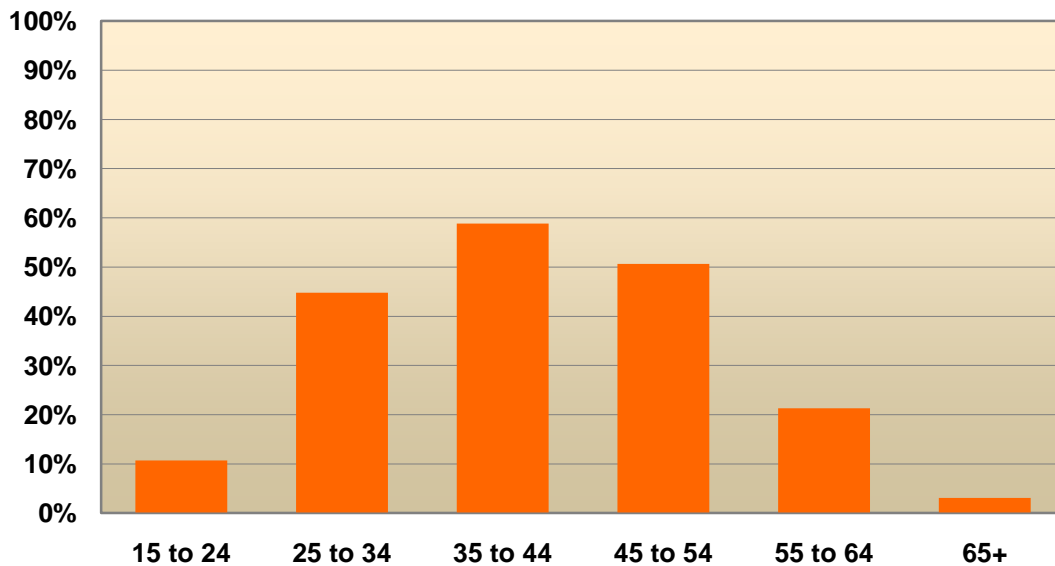




Civil Sector - Workforce Age Profile by Occupation



Civil Sector - Workforce Age Profile





The SkillsDMC workforce analysis contained within the Workforce Planning Reports includes a series of recommendations to the partnering enterprises.

Examples are listed below:

- Increase retention rates in Operator areas by offering formal qualifications and educating employees about available career pathways;
- Examine recruitment strategies and methodologies for relevance and to ascertain how well they are meeting the needs of the company - this may include a critical evaluation of recruitment agencies being used currently and how they can better address the requirements of companies; and
- Provide employment opportunities within the company for young people and the local Indigenous communities to include:
 - appropriate career paths through site roles; and
 - the Certificate I in Resources and Infrastructure Operations as a work experience strategy for local school students and as a pre-vocational employment program for suitable Indigenous people from the local communities;
- Utilise Skills Maximiser™ to establish a complete set of competency profiles for the operation and conduct up-to-date training needs analysis;
- Utilise site specific competency assessments to build on employee capability and meet business performance needs;
- Continue to analyse the drivers of workforce turnover to inform retention strategies;
- Develop strategies to improve retention rates and reduce the strain on the recruitment areas, allowing training resources to focus more on employee development and less on employee replacement; and
- Continue to explore the diversification of the workforce across gender and cultural sectors.





Mining Sector Workforce Planning Analysis

The Coal and Metalliferous mining sectors of the Australian resources industry for many years operated separately. Over the past fifteen years or so the two sectors have become closer due to the rationalisation of the major organisations operating in the sectors. Mergers, joint ventures, takeovers and contractualisation have consolidated individual operations into transnational organisations with an emphasis on production.

The resources sectors, through exports, are by far the biggest earner in the Australian economy with some 2% of the national workforce. Coal and iron, depending on the prevailing world commodity prices, are numbers one and two when it comes to winning export dollars. The mining industry, particularly coal, is highly regulated and requires a number of statutory officials present at the site to oversee operations regarding safety matters. The industry also employs very specialised personnel operating expensive pieces of equipment.

Mining of black coal is one of Australia's most important industries, creating significant employment in regional Australia, fuel for low-cost electricity generation and steel-making as well as being a vital source of export revenue. Australia is the world's biggest coal exporter and black coal is Australia's largest export.

In response to expected increased demand particularly from India and China, the Coal sector is assessing growth options including expansion of existing operations as well as the development of new mines. Demand on the workforce will need to be managed to a higher degree than has previously occurred.

From the information supplied by companies operating in the Metalliferous areas, all sites are in production or processing activities 365 days per year. A wide range of shift rosters were offered across the companies, ranging from Monday to Friday working hours to different Fly In / Fly Out (FIFO) set ups. Regular maintenance shutdowns are scheduled (typically around the annual holiday period) with immediate repairs/concerns addressed as they arise.

In several instances, the extraction, processing and refining of commodities involves highly specialised and technical processes which are specific to only one area of metalliferous extraction and/or processing.

Head Offices for all companies were either in the nearest capital city or the capital city where the majority of operations were based, regardless of whether they were involved in the reporting process. All sites were supported by camps, catering, recreation, medical facilities etc. Where utilised, FIFO employees were based not only in the nearest city or satellite city, but often across State/Territory borders as well. This reflects that companies are willing to fly skilled, valued and competent workers from wherever required.

Companies engaged with SkillsDMC articulated numerous challenges to recruiting, training and retaining employees. These include:

- Sourcing local people in sufficient numbers;
- Sourcing sufficient local people who fit with the culture and values of the company;
- Encouraging workers to relocate to remote towns;
- Providing clear career pathways to employees on all levels;
- Operating in remote locations;
- Coordinating and offering attractive FIFO and roster combinations;
- The availability of skilled works in niche occupations;
- Resourcing and coordinating training that is needed (for direct employees and contractors/visitors to site);
- Working with and around global impacts on markets and production;

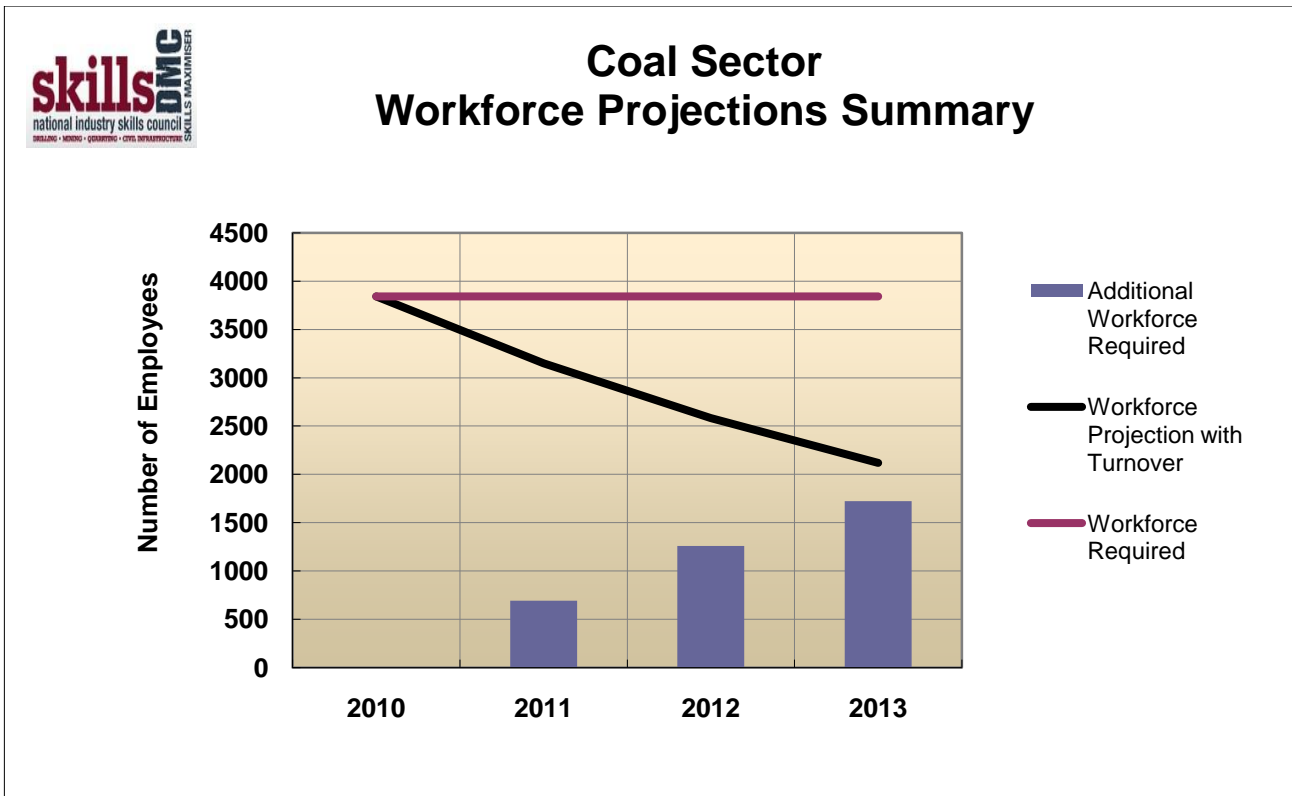


- Operating within a highly competitive industry;
- Establishing and maintaining beneficial relationships with stakeholders; and
- Being responsive to economic and market changes while maintaining production and workforce numbers.

Identified priority workforce requirements included:

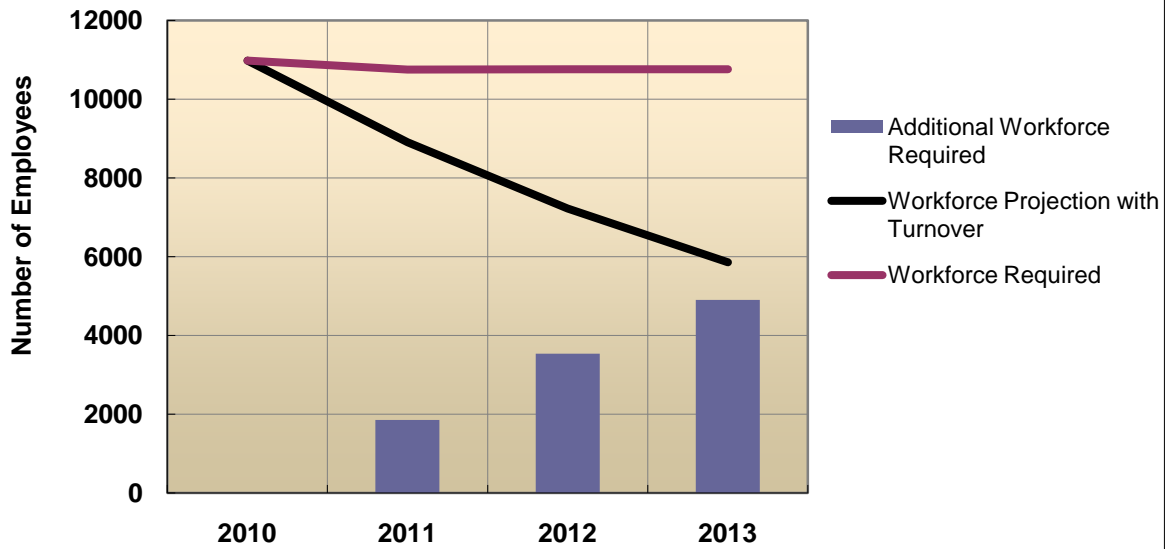
- Surface and underground operators;
- Mineworkers and assistants;
- Process operators;
- Other professionals;
- Tradespersons;
- Training and development personnel;
- Managers; and
- Mines rescue personnel.

Training within the engaged companies was undertaken by a mixture of in-house trainers and assessors and Registered Training Organisations. In the majority of cases, training was not undertaken to nationally recognised standards, although all of the companies indicated that this would be something that would be addressed in the mid- to medium- future. Safety training was predominant, as was training related to working in remote locations.

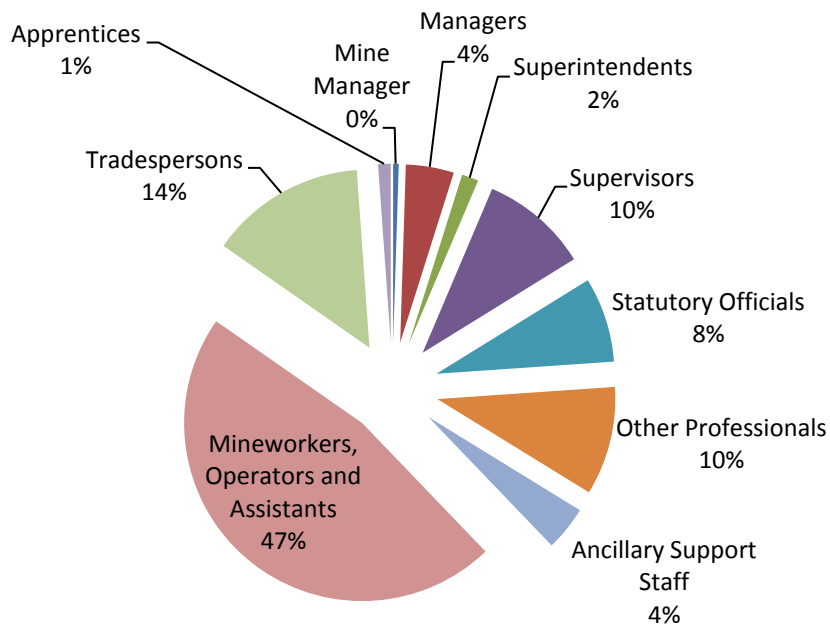


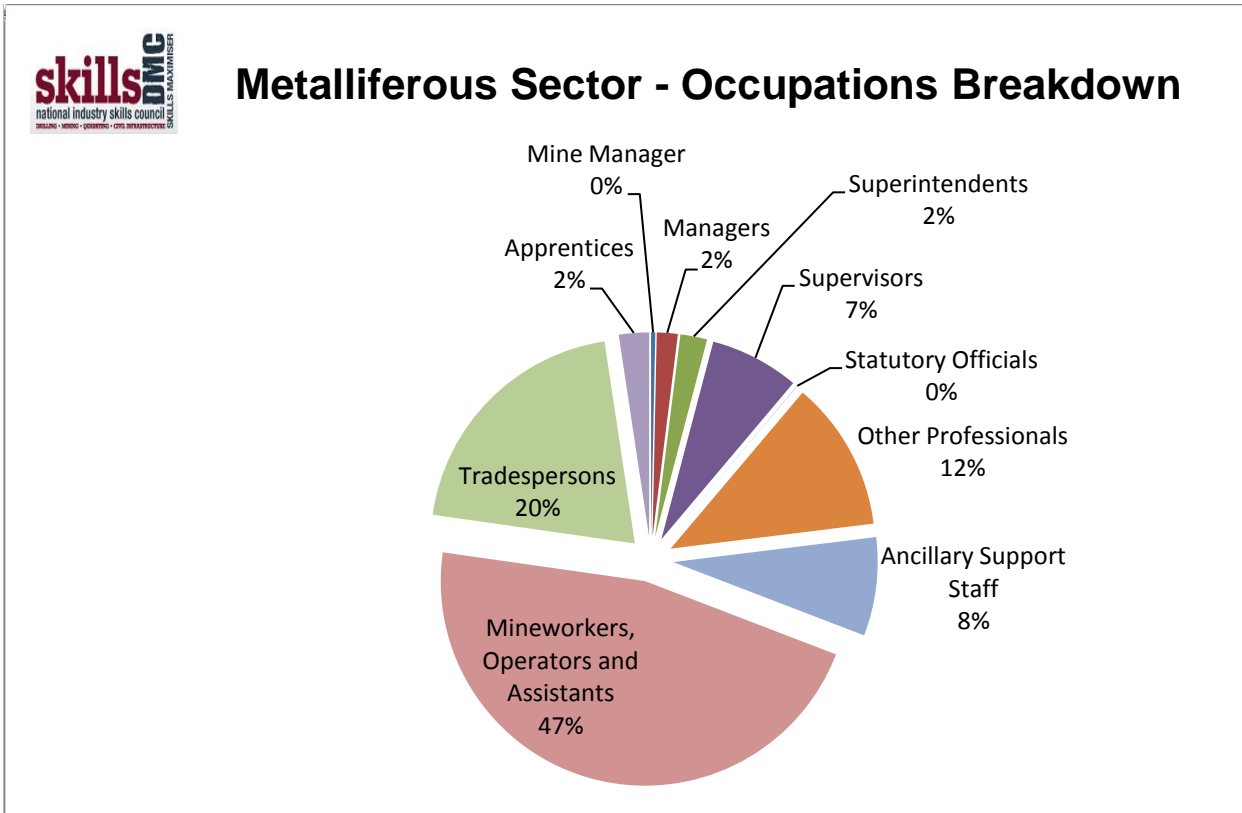


Metalliferous Sector Workforce Projections Summary



Coal Sector - Occupations Breakdown





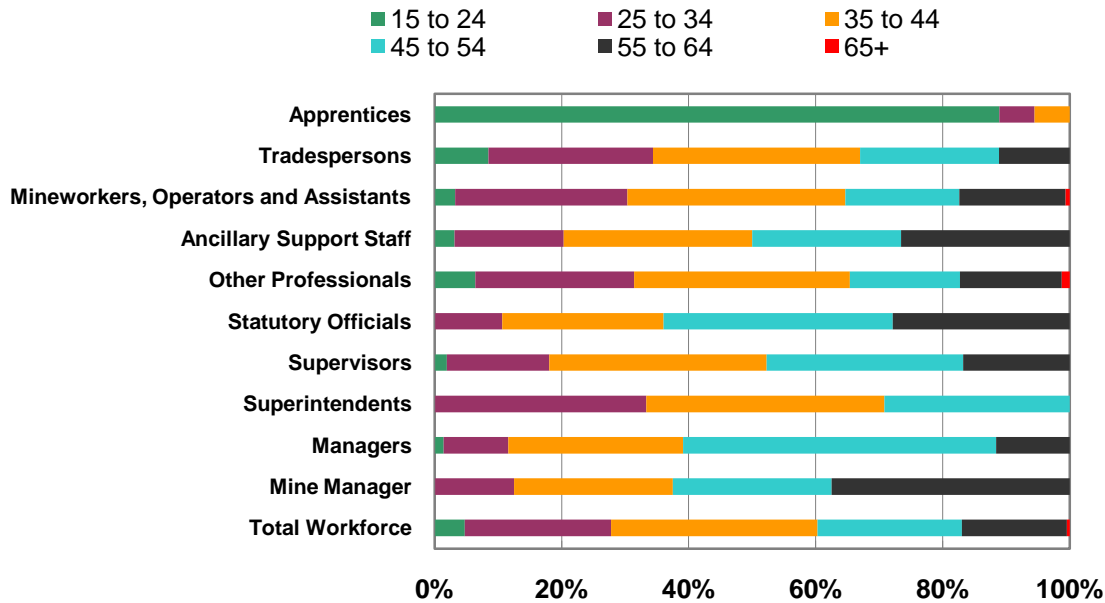
Strategies to grow the skills base are to:

- Provide opportunities for younger people to join the industry by providing appropriate career paths;
- Extend the working life of those retiring early from the workforce;
- Review and realign skills - the introduction of the Resources and Infrastructure Industry Training Package RII09 and its amalgamation of the resources sectors has assisted with this process; and
- Ensure employees have the opportunity to further develop their skills and competencies through ongoing training and leadership programmes.

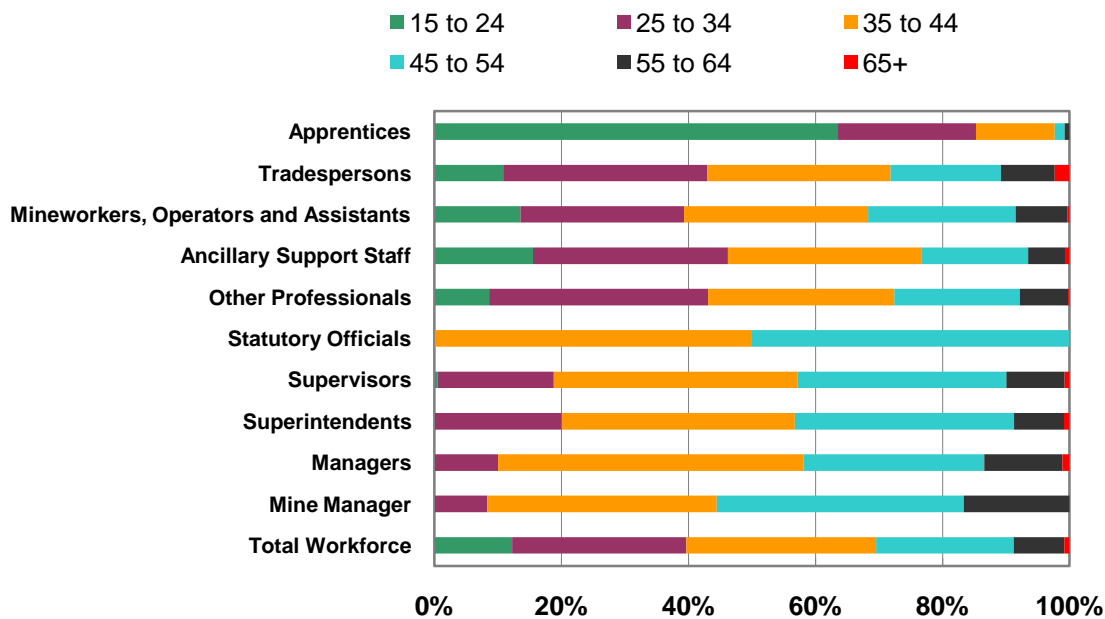
As a result of challenges in the mining sector in sourcing and retaining employees there are indications that companies are offering entry level training, establishing ongoing relationships with regional high schools in support of work preparation training as well as onsite work experience with pathways leading to nationally recognised qualifications or statements of attainment. This range of strategies encourages employment and new employees to stay with the organisation, continues to raise their skill levels and establishes longer term career progress in the organisations and the sector.



Coal Sector - Workforce Age Profile by Occupation

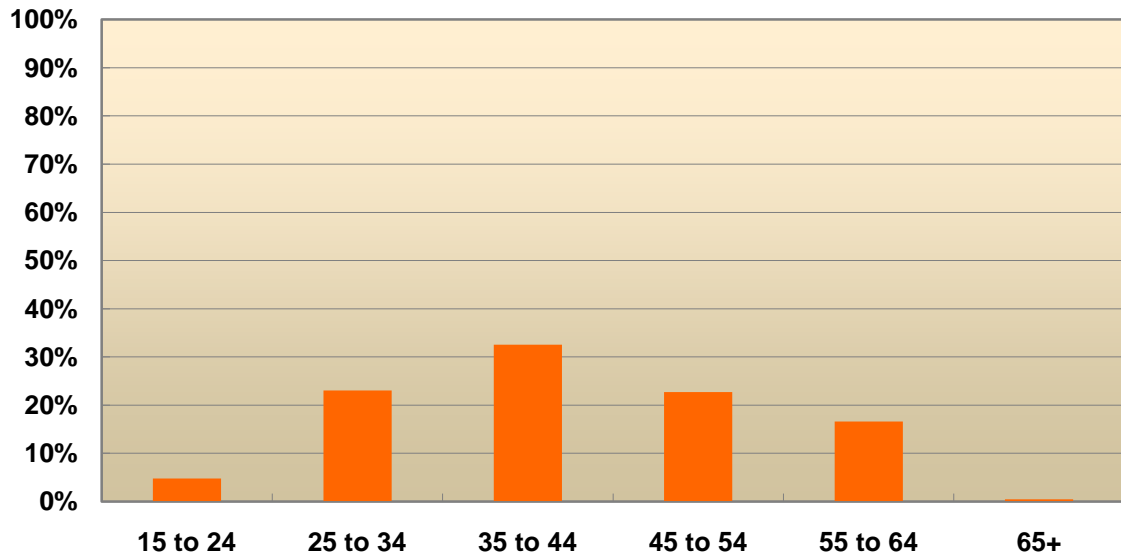


Metalliferous Sector - Workforce Age Profile by Occupation

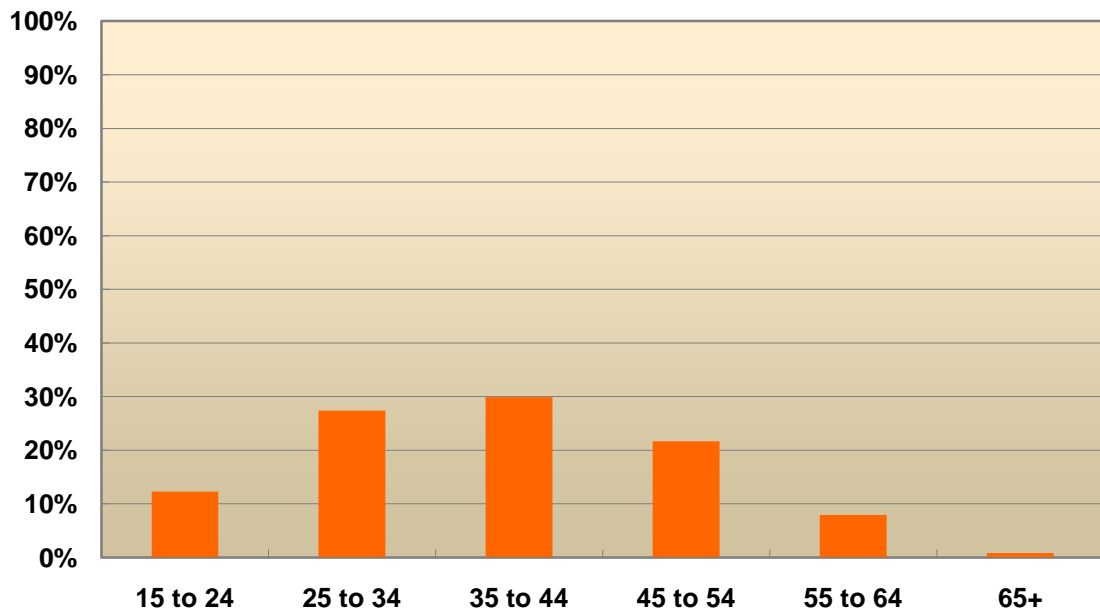




CoalSector - Workforce Age Profile

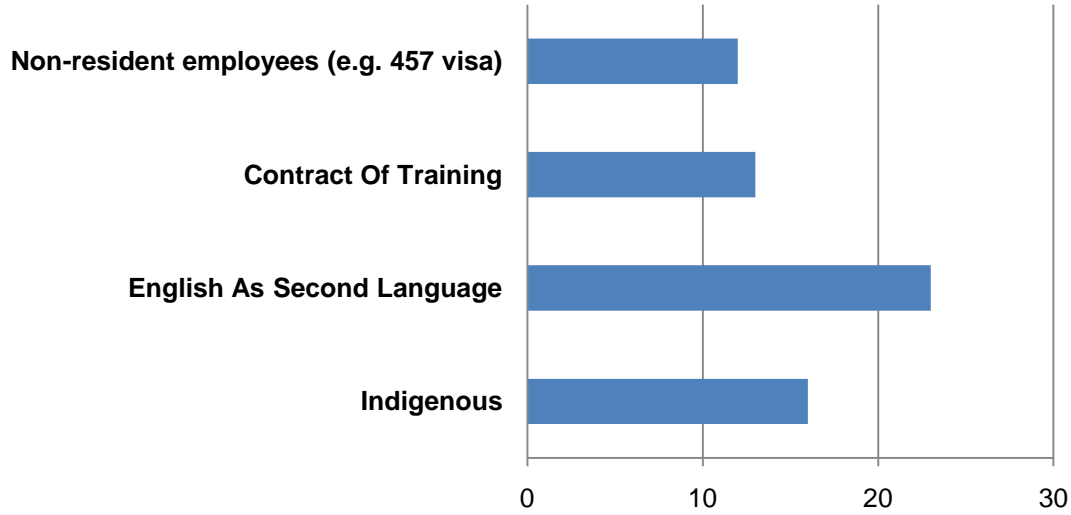


Metalliferous Sector - Workforce Age Profile

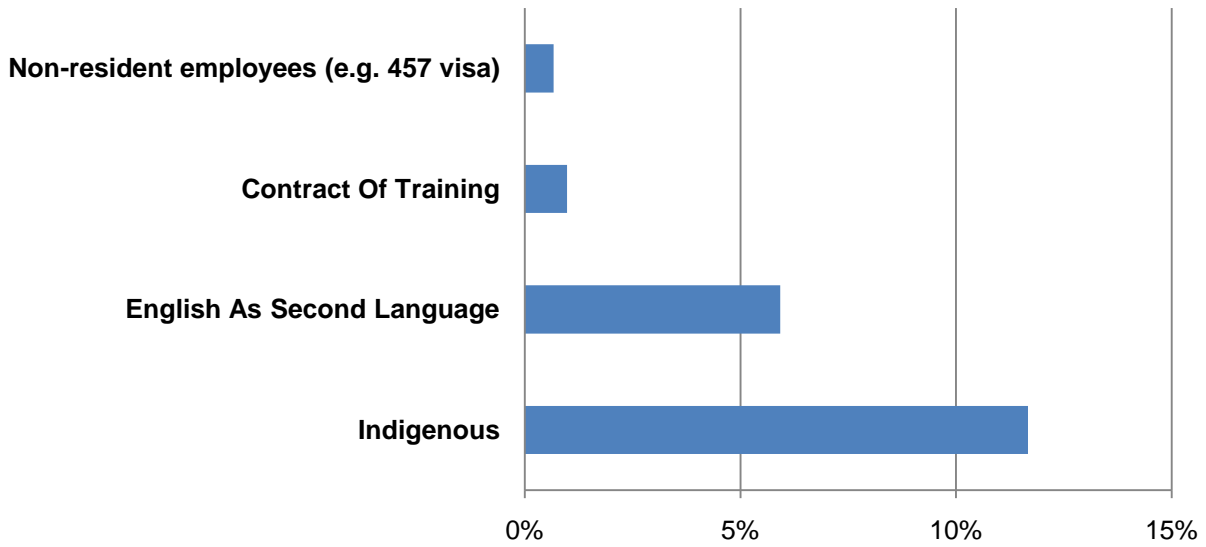




Coal Sector - Workforce Information

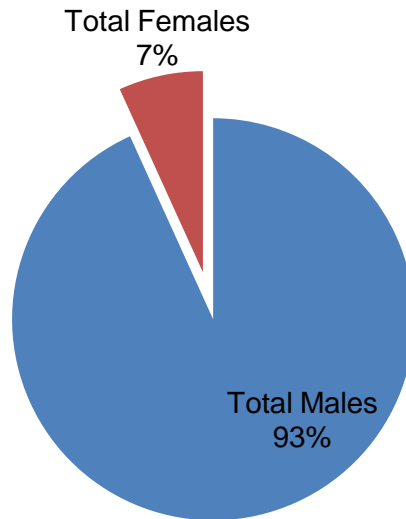


Metalliferous Sector - Workforce Information

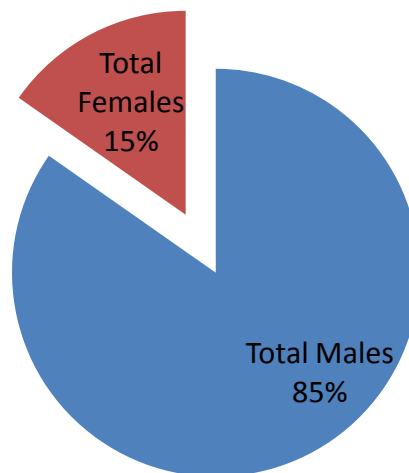




Coal Sector - Gender Breakdown



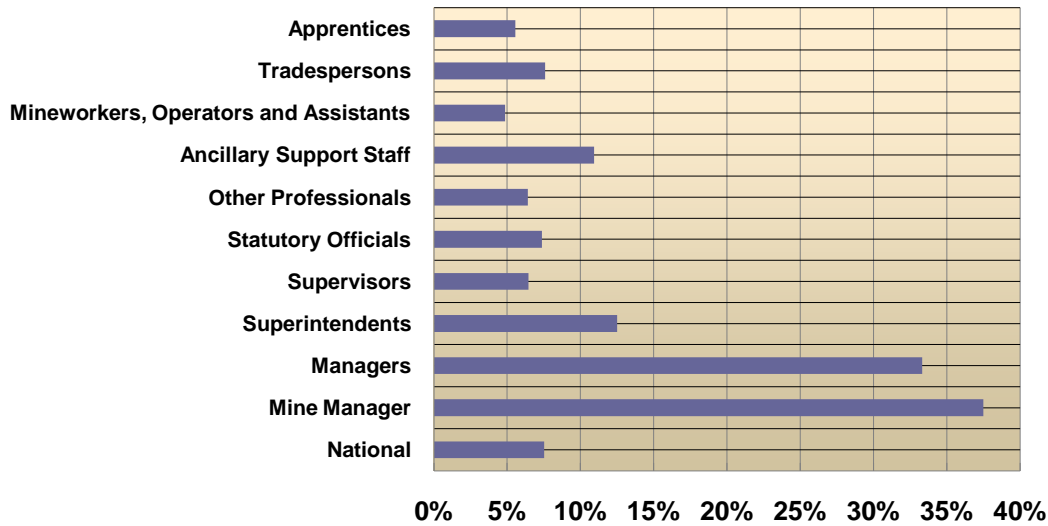
Metalliferous Sector - Gender Breakdown



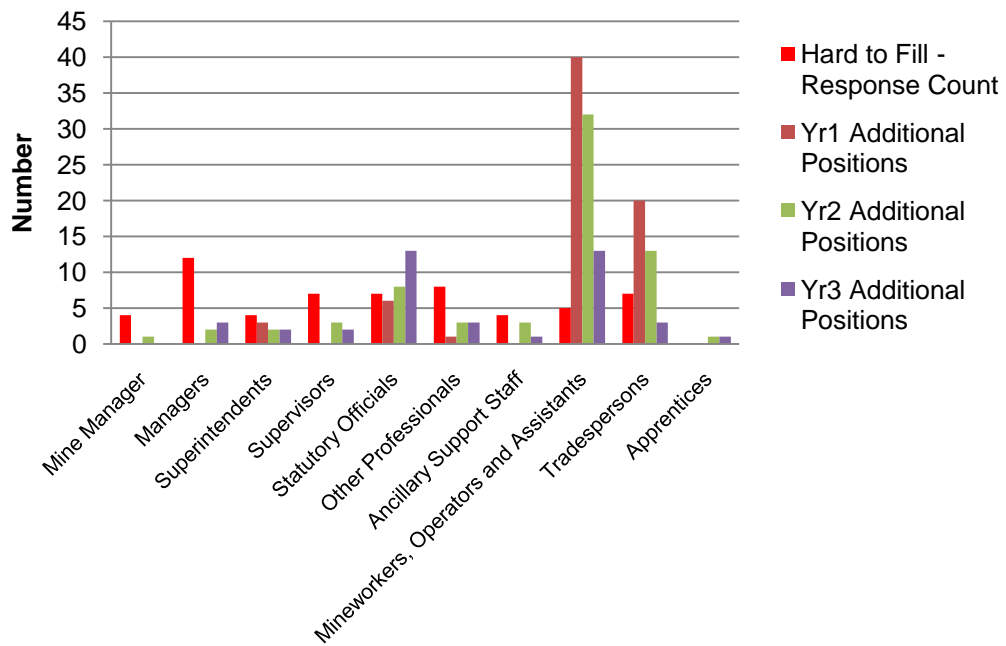
A major driver for change is the ageing work force and the demand for improved safety and productivity levels of individual employees and the workforce as a whole. The coal sector has recognised that the objective of skilled and qualified employees is important in a market that is growing.



Coal Sector - Workforce Turnover %

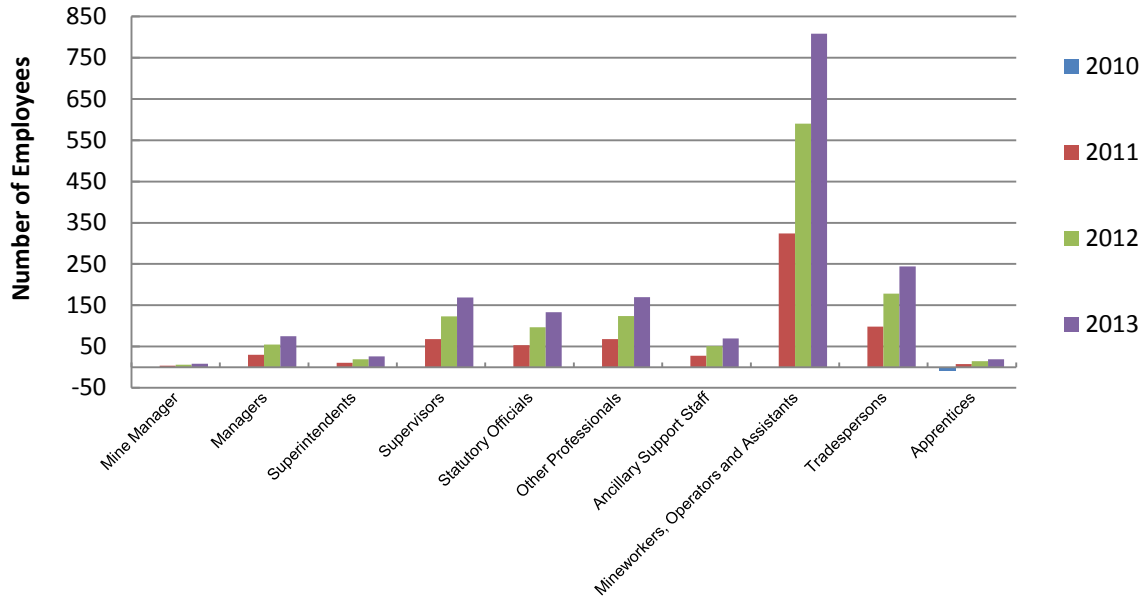


Coal Sector - Recruitment

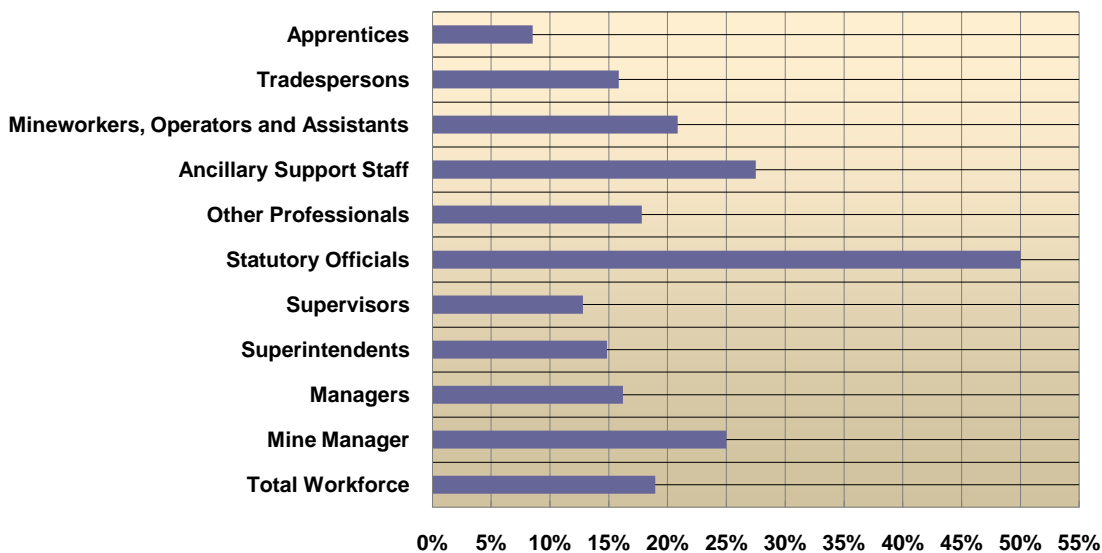




Coal - Sector Accumulative Additional Labour Requirements

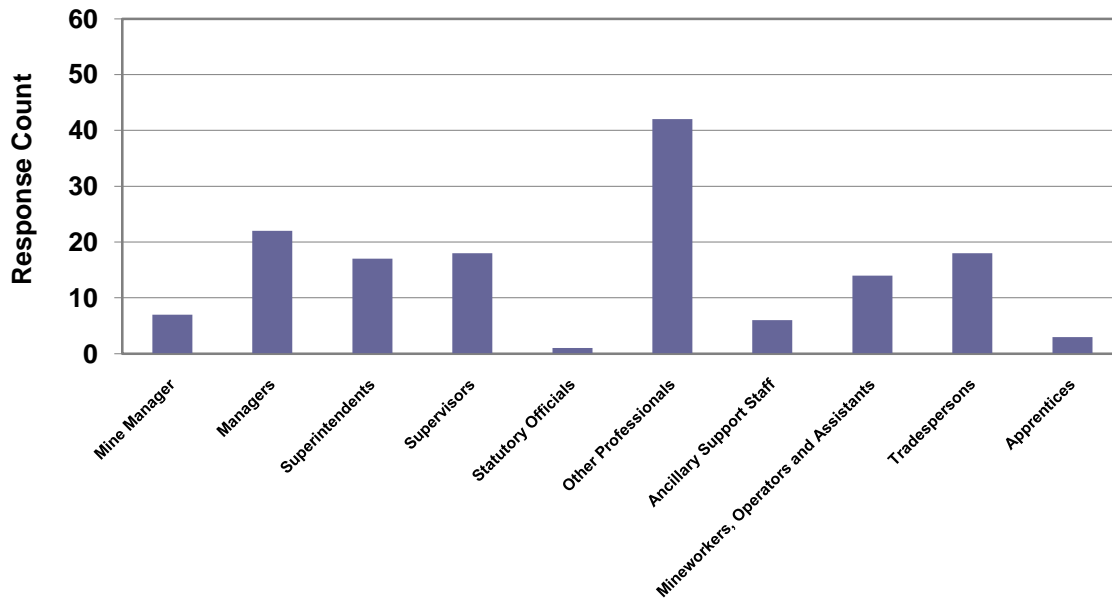


Metalliferous Sector - Workforce Turnover %

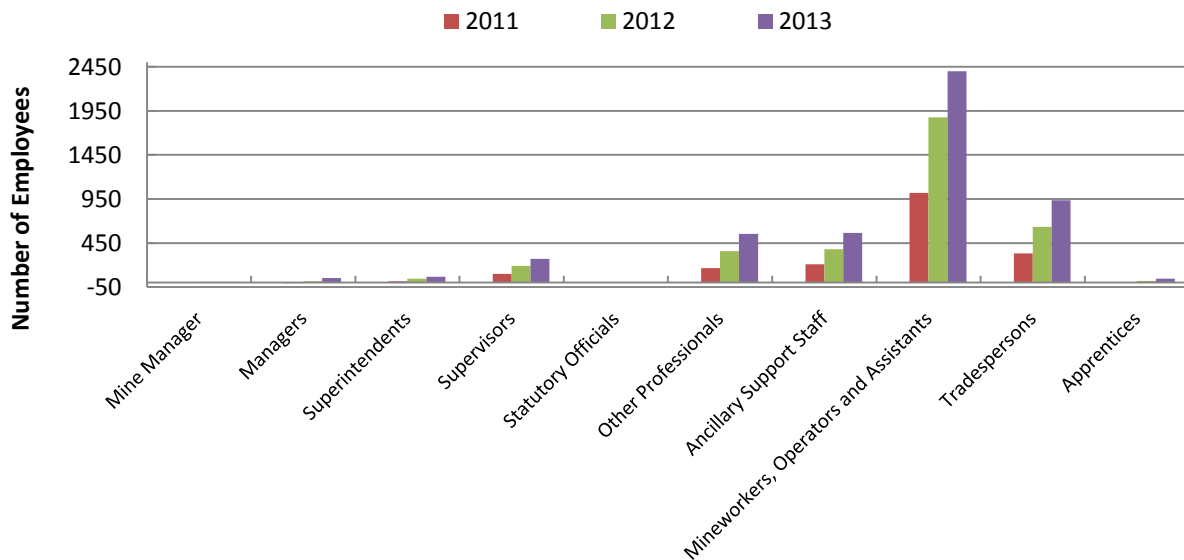




Metalliferous - Sector Hard to Fill Occupations



Metalliferous - Sector Accumulative Additional Labour Requirements





The SkillsDMC workforce analysis contained within the Workforce Planning Reports includes a series of recommendations to the partnering enterprises.

Examples are listed below:

- Achieve productivity, cost management and skills development objectives through targeted training strategies which upgrade the skills of employees and result in formal qualifications or skills sets recognition;
- Use Recognition of Prior Learning/Recognition of Current Competency or the issuing of Statements of Attainment to eventually achieve nationally recognised qualification;
- Develop site and company specific competency profiles that genuinely reflect the role of employees;
- Use in-house trainers and assessors to meet training needs and requirements, increasingly to support nationally recognised standards and certification;
- Identify and articulate career pathways linked to qualifications and roles;
- Identify target areas of training (that is, focusing on the area of highest need, addressing this and then identifying the next highest area of need)
- Develop strategies to improve the uptake of statutory positions;
- Consider introducing transitions to retirement, which will allow older workers to phase into retirement by gradually reducing their working hours, while increasing their mentoring efforts of younger replacement workers where appropriate;
- Increase employment opportunities for younger people and provide appropriate career paths and work experience strategies for local school students using the Certificate I in Resources and Infrastructure Operations; and
- Improve retention rates overall including the attraction and retention of female employees.

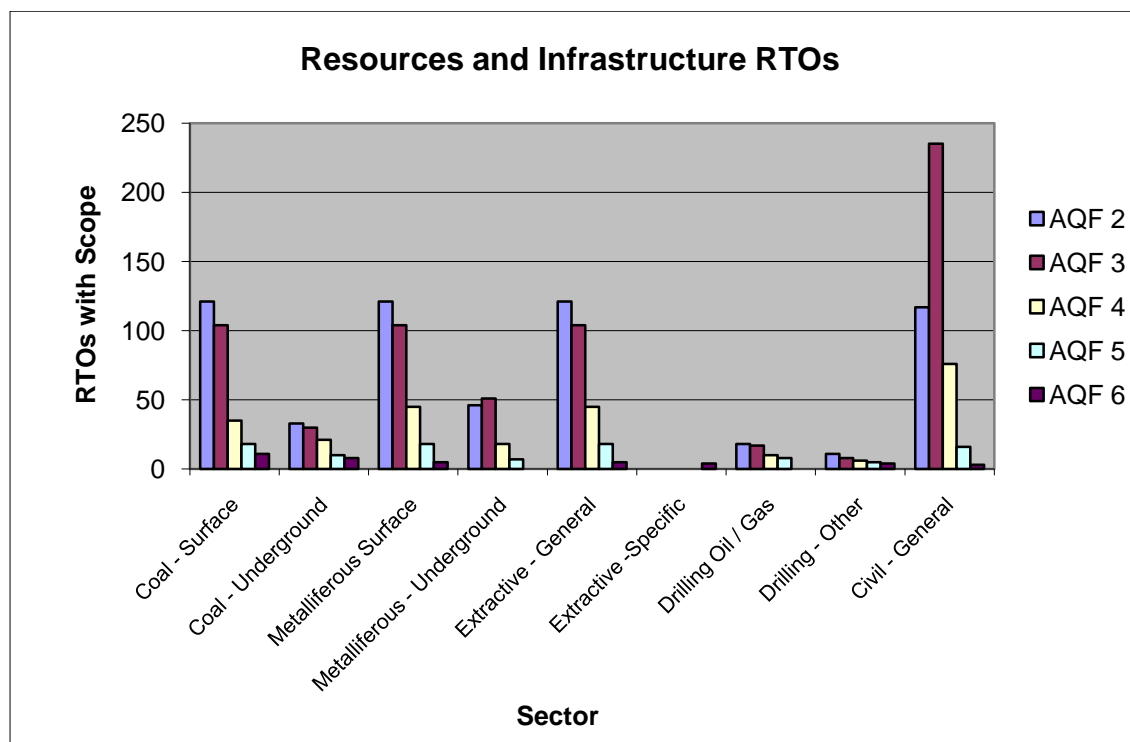


Current Impact on Training Packages

The impact on Training Packages within the context of “concerns of the ready availability of Registered Training Providers with the capability and capacity to deliver training in locations and in a way that meets the needs of the industry,” is shown in the following analysis. This demonstrates a key constraint in growing nationally recognised training in the Resources and Infrastructure industries is the lack of availability of Registered Training Organisations who have the scope to deliver RII09 qualifications. This will have a major impact on industry combined with concerns that those that do have scope have limited capacity and capability to deliver to the level and in the manner expected by industry.

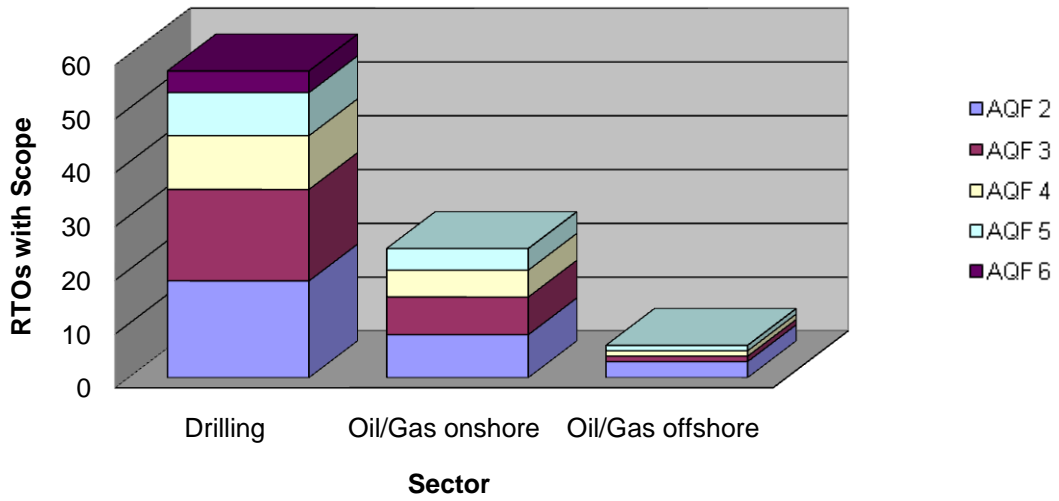
This limitation is most evident in the areas of:

- The impact of the availability of User Choice funding on the decisions of Registered Training Organisations to add qualifications to their scope;
- The lack of Registered Training Organisations with scope to deliver qualifications at Certificate IV, Diploma and Advanced Diploma levels;
- The lack of choice for enterprises for training providers; and
- The increased pressure on enterprises to develop and deliver their own training without funding support and then find an Registered Training Organisation to provide the accreditation through partnership arrangements (particularly in surface and underground operations, drilling, civil construction technical qualifications such as bituminous surfacing, trenchless technology etc).

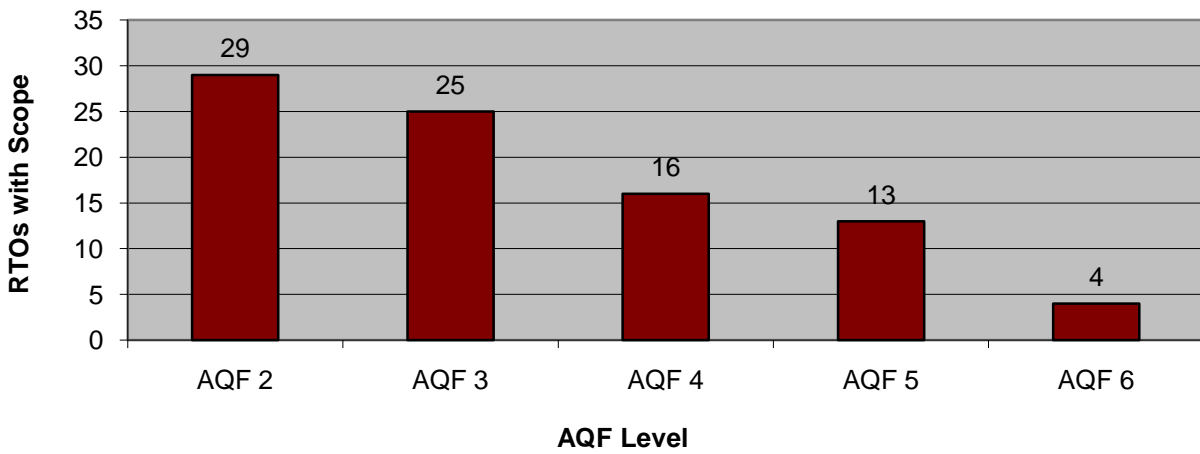




Drilling RTOs x Sector

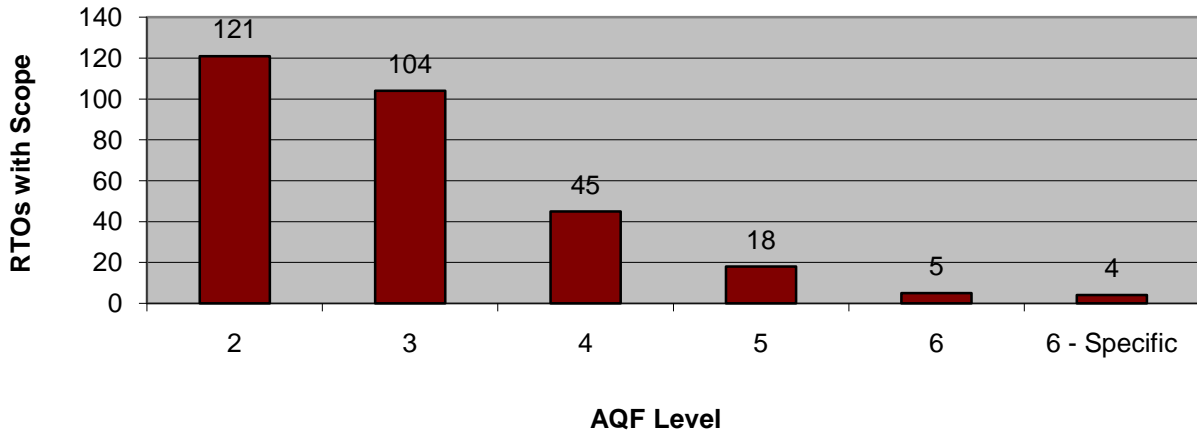


Drilling RTOs by AQF Level

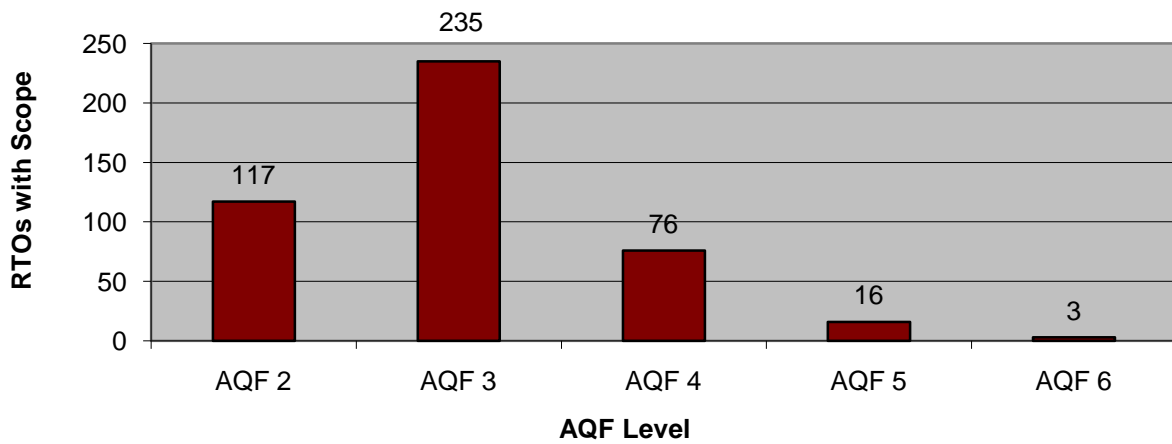




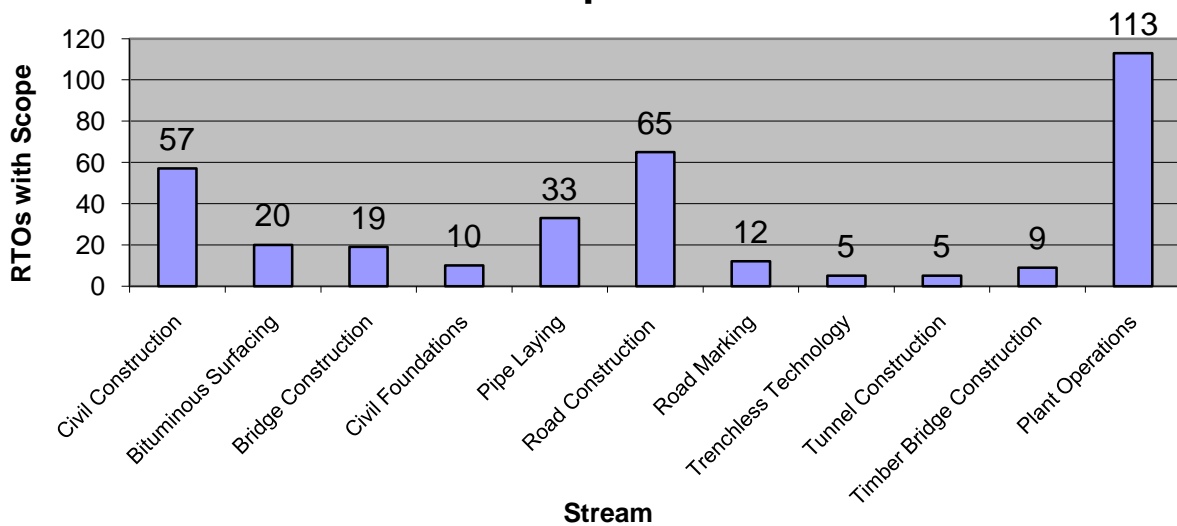
Extractive RTOs x AQF Level



Civil RTOs x AQF Level

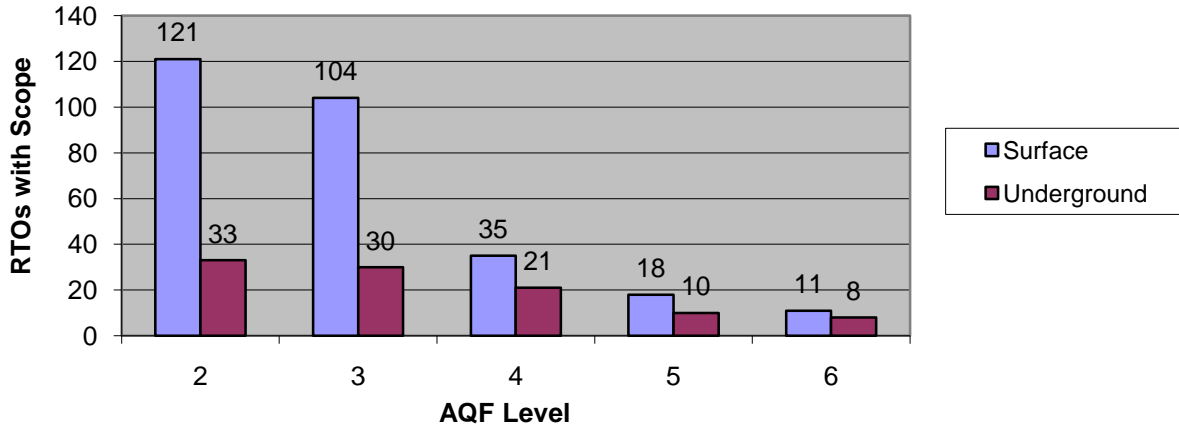


RTOs with Scope - Civil Streams

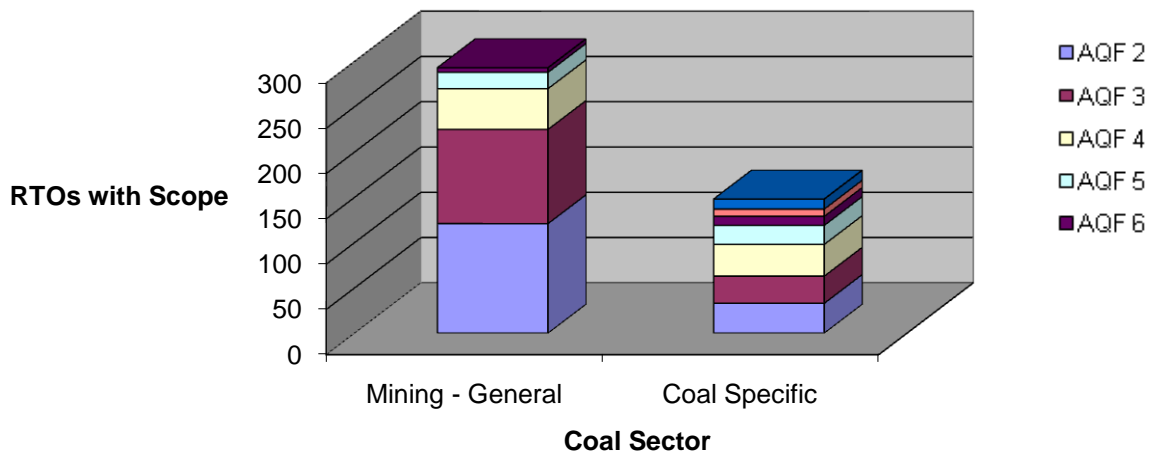




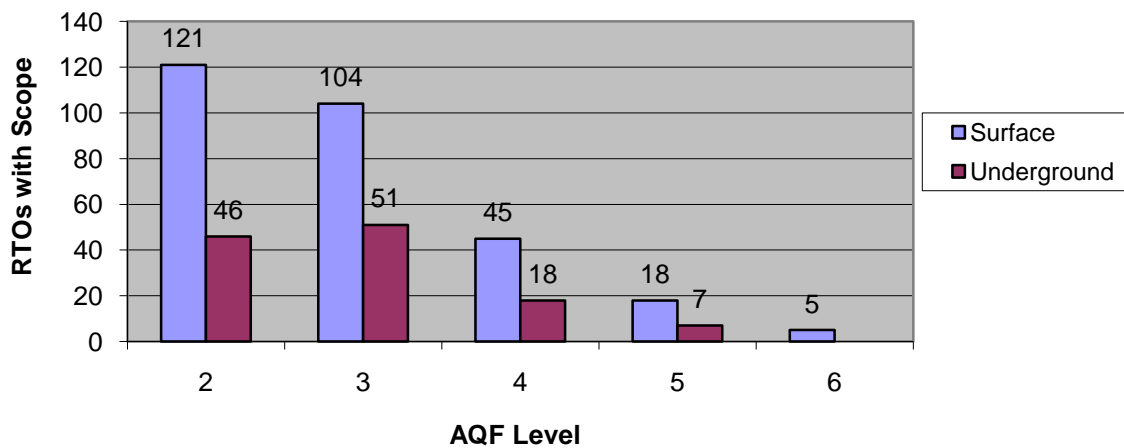
Coal RTOs x AQF Level



Coal RTOs with Scope

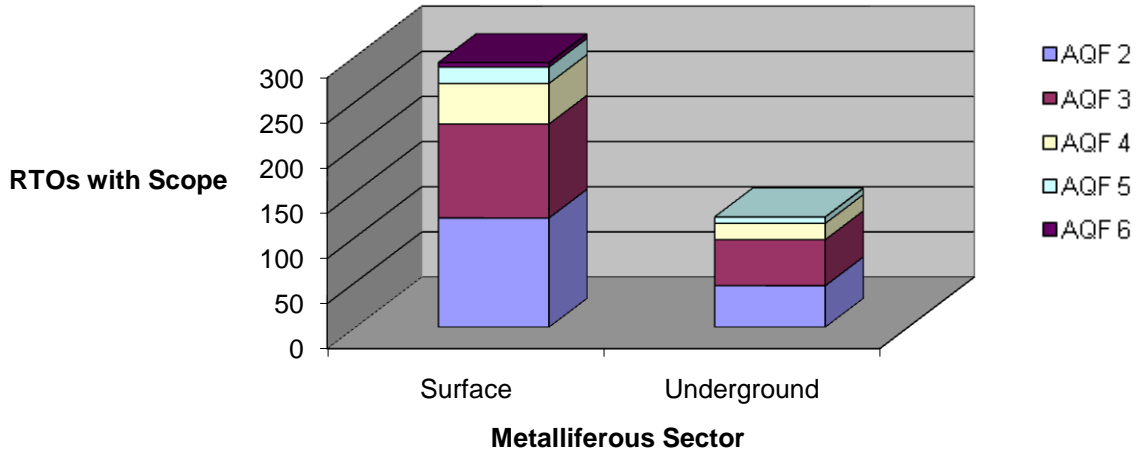


Metalliferous Mining RTOs x AQF Level

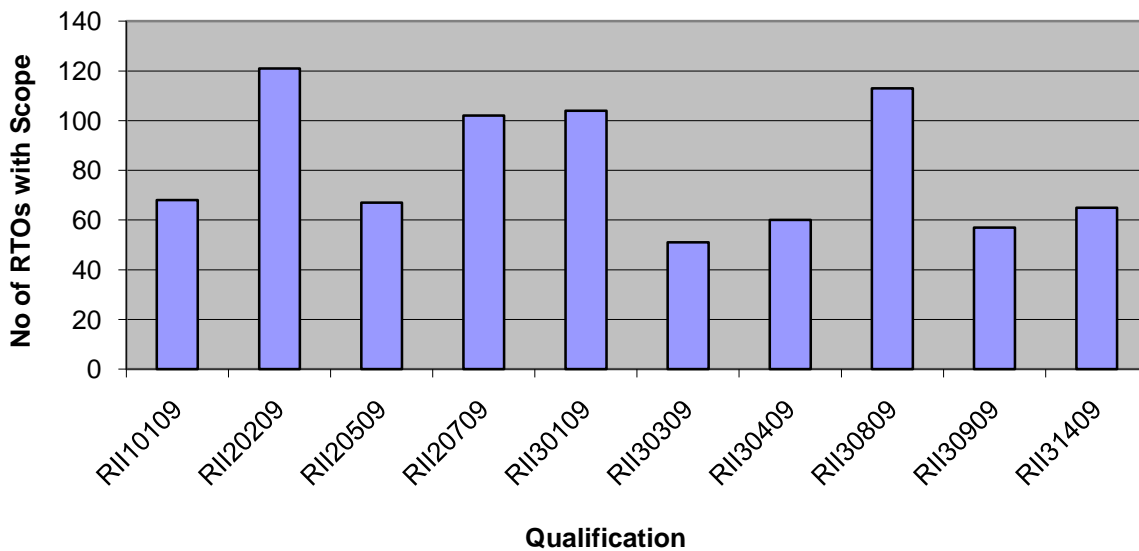




Metalliferous RTOs with Scope



Top 10 Qualifications for RTOs



RII10109	Employment Entry – Certificate I	RII20209	Surface Mining – Certificate II
RII20509	Resource Processing - Certificate II	RII20709	Civil Construction - Certificate II
RII30109	Surface Mining – Certificate III	RII30309	Metalliferous - Underground - Certificate III
RII30409	Resource Processing - Certificate III	RII30809	Plant Operations - Certificate III
RII30909	Civil Construction - Certificate III	RII31409	Road Construction and Maintenance - Certificate III





Appendix A

Report of Previous Continuous Improvement

Following on from the endorsement by the National Quality Council (NQC) on 7 July 2009 of RII09 – the Resources and Infrastructure Industry Training Package – the new rationalised Training Package was rolled out nationally to industry and VET stakeholders over the following 5 months. There were over 30 workshops held in the major metropolitan and regional centres, with approximately 2000 attendees.

<i>RII09 Resources and Infrastructure Industry Training Package</i>			
<i>Continuous Improvement</i>			
<i>Scope of work, industry, sector and occupations/skills involved</i>	<i>Industry imperatives for the work</i>	<i>Likely qualification levels affected</i>	<i>Timelines for start of work & submission to NQC</i>
<i>New units of competency for Explosion Protected Diesel Engine System, Coal Sector, Underground Coal Plant maintenance worker</i>	<i>The development of new units of competency is critical to ensuring underground coal plant maintenance workers carry out maintenance procedures in accordance with safety standards thereby reducing the risks of explosion in the underground coal work environment. This work is supported by the AS/NZS 3584.1, 2 and 3</i>	<i>Certificate III</i>	<i>Immediate Start with submission to NQC 31st August 2010</i>
<i>Review of Geoscience units of competency, relates to 18 identified occupations from Field Assistant to Senior Geotechnician</i>	<i>Provide career entry and progression opportunities for the geoscience and exploration occupations not addressed through existing qualifications.</i>	<i>Certificate III Certificate IV Diploma</i>	<i>In progress: Functional analysis July 2010 Map outcomes to existing units of competency and confirm requirements for new competencies October 2010 Draft new units of competency December 2010 Confirm packaging for qualifications February 2011 Submit for endorsement</i>
<i>New Concrete Paving units of competency, Civil Construction, Road Construction</i>	<i>Competencies required to meet the need for advances in concrete paving (road surfacing) in response to emerging technology</i>	<i>Certificate III</i>	<i>In progress: February 2011 Submit for endorsement</i>



RII09 Resources and Infrastructure Industry Training Package

Continuous Improvement

<i>Scope of work, industry, sector and occupations/skills involved</i>	<i>Industry imperatives for the work</i>	<i>Likely qualification levels affected</i>	<i>Timelines for start of work & submission to NQC</i>
<i>Continuous Improvement, Civil construction, Coal mining, Drilling, Extractive industries, Metalliferous mining, various occupations</i>	<i>Changes to units of competency and qualification packaging rules, as recommended by the relevant industry Training Package Working Parties to address issues raised through the SkillsDMC Issues Register. Please refer to Proposed Modification History for details.</i>	<i>Certificate III Certificate IV</i>	<i>Submission to NQC 31st August 2011</i>
<i>New Vacuum Extraction units of competency, Civil Construction</i>	<i>Competencies required to meet the need) in response to emerging technology in trenchless technology</i>	<i>Certificate III</i>	<i>In progress: February 2011 Submit for endorsement</i>
<i>New Sonic and Geothermal Drilling units of competency</i>	<i>Competencies required to meet the need in response to emerging technology in drilling</i>	<i>Certificate II Certificate III Certificate IV</i>	<i>To commence August 2010: February 2011 Submit for endorsement</i>



Appendix B

Methodology and Bibliography

This 2011 Environmental Scan for the resources and infrastructure industry sectors is based on industry intelligence and empirical and anecdotal data harvested through our industry stakeholder engagement processes and procedures.

These include:

- Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) – Australian Commodities reports
- Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) – Minerals and energy Major development projects – October 2010 listing
- Business Networking and Business Reports
- Companies participating in the Enterprise Bases Productivity Places Program
- Industry Peak Body/SkillsDMC Foundation Member submissions to the Skills Australia Creating a future direction for Australian vocational education and training Discussion paper
- Interface with industry associations/unions
- Media (generic and industry specific) Reports
- Minerals Council of Australia Vision 2020 Project; The Australian Minerals Industry's Infrastructure Path to Prosperity; An assessment of industrial and community infrastructure in major resources regions (May 2009)
- National Resources Sector Employment Taskforce; Resourcing the Future Report; July 2010
- Regional Workshops/Meetings
- Site Visits for each of the Coal mining, Metalliferous mining, Quarrying, Drilling and Civil Infrastructure sectors
- Skills Australia, Civil Contractors Federation and SkillsDMC Project to Review Civil Construction occupations and skill levels attributed to these occupations contained in the ANZSCO code system
- SkillsDMC Board
- SkillsDMC 2010 National Conference
- SkillsDMC National Network of Industry Skills Advisors Reports including reports on direct visits to enterprises by SkillsDMC Skills Advisors
- SkillsDMC Sector Standing Committees
- SkillsDMC Skills Maximiser™ facility encompassing Workforce Planning and Development Reports for enterprises
- SkillsDMC Training Package Working Parties involving industry subject matter reports, State/Territory, State/Territory Regulators, Registered Training Organisations and industry associations





Appendix C

Occupations in Demand

1. The industries and occupations represented by SkillsDMC are:

Industry/industries:

Resources and Infrastructure covering: Drilling, Coal Mining, Metalliferous Mining, Quarrying (Extractive industries) and Civil Infrastructure

Occupation(s) - Classification Descriptions:

Mine Manager:

The senior person at the mine site with overall operational responsibility including statutory obligations, safety, operations and financials.

Managers:

Includes roles defined as managers of sites, departments and areas other than Mine Manager, such as; General Manager, Production Manager, Operations Manager, Human Resources Manager.

Mine Superintendent:

Includes roles defined as superintendents with responsibilities for directing and overseeing specific areas of an operation.

Supervisor:

The level of management below manager and superintendent. Generally referred to as Supervisor/Coordinator/Team Leader and responsible for the day-to-day supervision of a shift, team or group of workers, with authority of the site management to give them directions.

Statutory Official:

Employee in charge of a section or district of a mine, with statutory duties as set down in the relevant mining regulations, such as : Open Cut Examiner, Ventilation Officer, Area Deputy.

Other Professional:

Includes staff that perform professional functions other than managers, superintendents and supervisors and who have not already been included in those categories. Includes roles such as engineers, accountants, technical services, geologists, surveyors, environmental scientists. Titles may refer to Specialist/ Officer/ Advisor/ Engineer/ Coordinator /Technician /Analyst /Senior /Principal /Graduate, but they are not predominantly supervising the work of others.

Ancillary Support Staff:

Includes other staff that support management, supervision and professional functions in a clerical or administrative capacity such as clerks, payroll, secretaries, office assistants and storepersons.

Mineworker /Plant Operator /Assistant:

Employees who perform and assist with the production and plant operational functions across mine and quarry sites and civil construction.



Drillers:

Employees who are in charge of the operation of drilling rigs.

Drillers Assistants:

Employees who assist in drill rig operations.

Tradesperson:

Employees who perform tasks such as the repair, maintenance, installation and services functions of plant, equipment and site requirements. Those employees who are qualified to a "Traditional Trade Qualification" such as an electrician, mechanic, welder, fitter etc.

Apprentice:

Someone employed under a contract of training in a traditional trades occupation, working under the direction of a certified tradesperson such as an electrician, mechanic, welder, fitter etc

2. Occupations which require formal licensing or registration are:

Plant Operator;
Open Cut Examiner;
Mine Deputy;
Quarry Manager; and
Mine Manager.

3. Medium-to-long term trends that are expected to impact the employment outlook:

Planned mining and energy investment is at a record \$132.9 billion. The value of projects under development hit a high in October 2010, up 21 per cent since April 2010 as reported by the Australian Bureau of Agricultural and Resource Economics (ABARE).

In the mining industry, ABARE advises that capital spending is expected to top \$54.8 billion this financial year, up 58 per cent on the previous year.

The ramp-up in resources investment is expected to continue as companies decide on a host of potential projects.

This will lead to quite severe skills shortage ahead. There is already effectively "full employment" among the qualified trades and therefore sourcing people for the expansion of activity will prove extremely difficult.

In addition, the release of the recent *2010 Australian Infrastructure Report Card* by Engineers Australia notes that "a large proportion of Australia's infrastructure is reaching the end of its useful life" and that "the capital investment on infrastructure required over the next decade will be very significant."



Specifically, the following provides details of Skills Shortages and Recruitment Difficulty areas:

ANZSCO Code – Occupation *	Occupation – Industry Title
133111	Project Managers
1332-11	Engineering Manager
1335-13	Production Manager (Mining)
2112-11	Geologist
2322-11	Surveyor
2332-11	Civil Engineer Infrastructure Engineers
2333-11	Electrical Engineer
2335-12	Mechanical Engineer
2336-11	Mining Engineer (Excluding Petroleum)
2344-11	Geologist
312114	Estimators
3122-11, 12	Civil Engineering Draftsperson and Technician
3123-11, 12	Electrical Engineering Draftspersons and Technicians
3129-13	Mine Deputy
	Statutory officials Underground Mine
	Managers
	Open-cut Examiners
3212-11	Motor Mechanic (General)
3232-11, 12,	Fitter (General), Fitter and Turner
330000 – Construction Trades Workers	Supervisors / Team Leaders / Line Manager / Foreman
399999 – Technical and trades workers NEC	Pipe Layer
399999 – Technical and trades workers NEC	Bridge Constructor



ANZSCO Code – Occupation *	Occupation – Industry Title
399999 – Technical and trades workers NEC	Road Construction and Maintenance
712200 – Drillers, Miners and Shotfirers	Shotfirers
712211 – Driller	Drillers
712212 – Miner	Plant Operator
	Underground Miner (Coal)
	Underground Miner (Metalliferous)
721999 – Mobile Plant Operators NEC	Plant Operators
* ANZSCO codes and titles do not adequately reflect the skill level of the occupations listed. However suitable alternatives do not currently exist.	

4. Occupations that are in new and emerging areas, and which are not currently captured adequately by the Australian and New Zealand Standard Classification of Occupations:

Remote operation of plant and equipment;
 Developments in resource processing techniques; and
 Developments in processes and technology in the field of Trenchless Technology and Drilling.

NOTES



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