Manufacturing:

It's in our national interest

2014 Environmental Scan

INDUSTRY SKILLS COUNCILS
Creating Australia's Future

MSA
Manufacturing Skills Australia

Welcome to the Manufacturing Skills Australia Environmental Scan 2014.

The Environmental Scan

Rapid advances in technology, seismic shifts in global demography and rise of the conscientious consumer are just some of the factors that have left economists and policymakers recognising the limited relevance of historical trends and data as a reliable indicator of the future.

Attempts to predict industry's future workforce and skill development needs can be particularly fraught as industries continue to evolve, converge or re-locate and as new job roles emerge while others become obsolete.

Leading developed nations are establishing 'early warning systems' to quickly detect the onset of trends and building agile vocational training systems capable of responding to issues once identified. Environmental Scans have been conceived on this basis.

Specifically, the Environmental Scan identifies the macro and micro factors currently impacting on the skill needs of the workforce and its composition, it considers how well the national training system, its products and services, and industry itself are responding.

Grassroots evidence and real-time intelligence from across Australia are what sets the Environmental Scan apart from other reports in the national training system. It captures intelligence gathered from on-going visits and conversations with industry, key stakeholders, regulators and critically, the people doing the jobs across the sectors, and who experience firsthand the impact of change. It also draws on a range of topical sources such as the latest industry, enterprise and government research, and international developments. A detailed methodology can be found at Appendix B.

As a document limited in size, the Environmental Scan does not seek to capture every issue within every sector. It is a snapshot of a continually evolving story that is intended to alert and inform a wide audience and enhance their capacity to act.

The Environmental Scan's formal audience is the Department of Industry, the Australian Workforce and Productivity Agency and the National Skills Standards Council although its relevance extends far beyond and continues to be used extensively by state and territory governments, industry bodies, enterprises and many other stakeholders involved in skills and workforce development.

Environmental Scans are produced annually by Australia's Industry Skills Councils as part of their broader role in gathering industry intelligence and undertaking high-quality analysis of the skills needs and profile of the current and future workforce.

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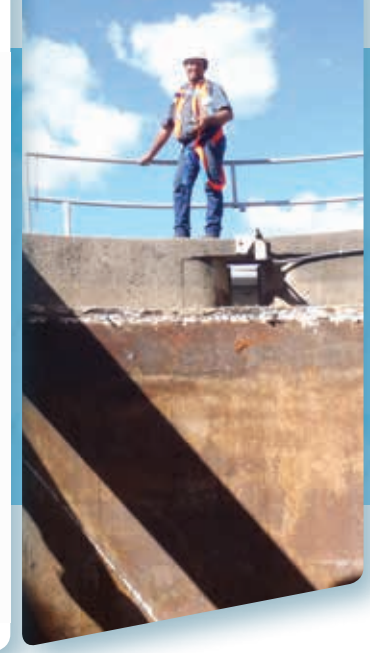


Welcome

Manufacturing has certainly had another rocky journey over the past 12 months and we have witnessed more losses resulting from the consolidation that is occurring across our sectors. More is yet to come across automotive and component supply chains, following the historic 2013 announcements that Ford and Holden will close their Australian operations. Undoubtedly this has led many to question the viability of manufacturing in Australia and there has been much discussion about its place in our economy.

While MSA's 2014 Environmental Scan tells this story of struggle, it also explores the many opportunities that can take manufacturing forward into a dynamic and sustainable future. The contributors to this year's report stress that Australia is at a crossroads, with serious decisions to be made about next steps for its manufacturing industry. They maintain that it is strongly in the national interest that the opportunities be actively pursued.

MSA has worked alongside its stakeholders for many years now to help build capacity and capabilities that can actualise opportunities. We hope this year's Environmental Scan further supports this mission and extend our gratitude for all the valuable contributions.

We look forward to telling manufacturing's story from the sunnier side of the crossroads.

Megan Lilly
Chair, Manufacturing Skills Australia. February 2014

MSA would like to thank the following organisations for their photographic contributions: Atelier Zuhal: Organic Textiles (participant in TCF Australia Energy Efficiency Project), Australian Glass and Glazing (AGGA), Barden Produce, Bright Print Group, Biggenden Engineering Works, Boating Industries Alliance – Australia, Caravan & Camping Industry Association NSW, Caravan RV & Accommodation Industry of Australia Ltd (CRVA), Choices Flooring, Concept Caravans, Council of Textile and Fashion Industries of Australia (TFIA) Johannes Wosilat (photographer) Martina Gemmola (photographer), Custom Fluidpower, Flair Cabinets Wodonga, Green Embassy (Organic Fashion), Hurford Hardwood, Jewellers Association of Australia, Lidcombe TAFE, Metalsa Australia, MIGAS Apprentices & Trainees, O-I Australia (glass containers), Programmed Timber Supplies, Qantas, Regional Express (REX), Stoddart Manufacturing, Workspace Training, WorldSkills Australia.

Contents:

Executive summary

Manufacturers have endured very difficult conditions since the GFC hit in 2009; they have been working hard and are weary. For many, the last 12 months have been the final straw and we have seen more of Australia's manufacturing stalwarts leave for greener pastures overseas, or close their doors for good. Manufacturing Skills Australia's (MSA's) Environmental Scans (EScans) have tracked this journey for the last seven years and as we move into 2014, it appears that manufacturing in Australia is at a crossroads, one that holds significant consequences for our future.

Without doubt there has been a need to consolidate the less efficient and unsustainable operations and sectors, and there is extensive evidence that this has occurred and is still in progress. There is also ample evidence that there is a new world of opportunity for manufacturers that are able to answer the call. Most enterprises today are somewhere on this continuum. In the research for this year's EScan, manufacturing stakeholders overwhelmingly expressed skepticism about Australia's commitment to being counted in this new world. They point to unfair trade conditions, overdependence on the mining/extraction of our raw materials, lack of strategic industry direction and declining capacity to develop the skills they need. They are dubious that investment, which is withdrawn from traditional sectors like automotive, will be redirected towards alternative and emerging industries. The lack of leadership in establishing a high-level, strategic direction for Australian manufacturing continues to be a primary frustration across industry sectors.

Debate about the place of manufacturing in Australia has raged throughout 2013, while capacity and capability have been lost. At the same time, the way forward has become clearer. Manufacturers believe that if Australia properly valued the contribution they make to the economy, jobs, innovation and sustainability, there could be a more useful focus on the real question at hand.

"How can we as a nation make the best of our gifts and opportunities to develop a competitive and dynamic manufacturing industry?"

This year's EScan attempts to explore the opportunities and barriers that accompany this question. It builds on the premise that manufacturing in Australia is most definitely ***in the national interest***, and that leadership and action are a national priority.

Key issues in 2013

- The high value of the Australian dollar, high level of regulation and high operating costs continue to have negative ramifications in domestic sales and exports as well as in attracting foreign investment. On top of this Australia's competitive position appears to be worsening.

- Slowdown in mining and resources projects is still impacting supply chains and many enterprises have diversified to reduce their dependency. The slowdown has also resulted in significant redundancies, lower take up in apprenticeships, and in some cases has relieved skill shortages.

- Lack of access to affordable energy is constraining manufacturers (especially on the east coast) and driving up costs. Enterprises note that the United States has used its gas boom to create competitive advantage, which has seen 500,000 manufacturing jobs created in the past three years. Industry is calling for a policy response to domestic gas supply in Australia.

- Australia is losing significant opportunity by not adding value to its raw materials. The liquefied natural gas (LNG) boom in particular could be more effectively leveraged. Industry estimates that Australia loses $255 million in industrial output for every $12 million gained in export output. Iron ore also holds extensive industry development potential.

- Procurement practices are disadvantageous to Australian enterprises. Resources contracts are often too large, stipulate unwieldy compliance requirements, or favour international suppliers. Industry believes that a more thorough examination of the true cost and value proposition in procurement would create a more equal environment, and that procurement practices should be examined across government. It also calls for greater advocacy in high-level procurement decision making.

- Australian enterprises are in competition with international suppliers that are not required to meet the same standards as they are. Enterprises are especially frustrated at the double standards in domestic projects that are owned and operated by multinationals. They assert that Australian standards should apply to all operating within Australia.

Opportunities for Australian manufacturing

There are clear opportunities emerging for Australian manufacturers, which will demand new business focus for many, and draw on specific skills. They build on Australia's ability to produce short runs of highly customised products and services that meet specific market needs. Australian enterprises can compete effectively in these spaces that cannot be catered for by mass production. This is where the agility of manufacturers to respond to market demand and change is paramount. These enterprises gain leverage from their specialised products and services by supplying a global customer base. Here the value is in quality and fit rather than quantity and cost.

Modern manufacturers are diversifying their product range to reduce their dependencies and using technologies to maximise productivity. They work collaboratively to improve outcomes and target sustainability not only in their products and services, but also in the way they operate.

The key opportunities identified in MSA's research are:

- Niche, specialised, high-quality and global goods and services
- Customer driven, customer focused, tailor-made solutions
- Service orientation and provision of useful service options
- Value-adding to raw materials and pre-made products
- Advanced manufacturing processes and technologies
- Technology investment across all business operations
- Research, development (R&D) and innovation
- Industry alliances and cross-industry collaboration
- Diversification into new products, services and markets
- Sustainability in products and processes, including through-life support and end-of-life disposal
- Developing markets in Asia and across the world

There are considerable skill implications in actualising these opportunities.

• Strong leadership • Business and workforce planning skills • High-level technical skills, often in specialised areas • Skills in using and developing technologies • Upskilling of existing workers to ensure high-quality and best practice • Navigating and developing global markets • Performing in the digital economy • Lean and agile production management capabilities • Excellent market research, customer service and management skills • Capability in using design and production technologies • Science, technology, engineering and mathematics (STEM) and problem solving skills • Innovation and intellectual property (IP) management • Research and development, and ability to efficiently deploy innovations • Collaboration • Capacity to be multiskilled and apply broad-based technical and trade skills to a range of contexts • Waste management • Application of sustainability principles to product development and operations • Cultural skills • Global supply chain management

With many thousands of manufacturing jobs now gone, and many more expected to go in the near future, it is critical that what remains of Australian manufacturing is efficient and highly productive. The question is, can the vocational education and training (VET) system respond accordingly?

The challenge for VET

VET stakeholders are change weary and there is widespread confusion about the implications of reforms that are being implemented around the country. Many point to contradictions in priorities and outcomes.

There is a significant focus on funding and many are concerned that commercial drivers are having more influence on training availability than the needs of industry. This is particularly concerning for manufacturing, which often requires high-cost training delivery for low trainee numbers. Already, important training options for manufacturing have reduced and even disappeared in some cases.

In many ways, the future of VET looks similar to that of manufacturing generally; it needs to become more agile and customer-driven, focused on quality and fueled by innovation.

Manufacturing needs a greater focus on higher-level skills and upskilling of existing workers will be a priority if it is to pursue the opportunities available. It needs to develop the specialised skills needed to perform in thin markets. New funding regimes appear to work against these outcomes.

Registered Training Organisations (RTOs) are seeing a significant drop in apprenticeship enrolments in this new VET environment and they predict that this will get worse. Enterprises agree that changes to incentives are discouraging, especially on top of current economic difficulties.
Any reduction of enrolments in key trade areas is very worrying for manufacturing and the other industries that depend on these skills.

The impact of reforms on TAFE is also a concern to manufacturing stakeholders. TAFE is an important provider of manufacturing courses and its ability to engage less advantaged learners is critical to increasing overall participation in manufacturing and other workforces.

The past year has seen widespread increases in course fees, especially by public providers, and this is likely to bring a greater focus on the value VET provides. Currently employer satisfaction varies and some express concern about the technical expertise of trainers and the rigour of training and assessment. However, the responsibility for outcomes lies equally with employers. Enterprises must get more involved in identifying their skill needs and how training outcomes can be supported. Well-targeted and structured training is fundamental to achieving useful results. Many employers are not sure what their workforce development needs are.

MSA is finding its Manufacturing Workforce Development Service (MWDS) is adding enormous value. Enterprises are responding with better engagement of appropriate VET options and are saying that they are receiving help they didn't realise they needed.

VET also needs to lift its responsiveness to ensure it provides custom-made solutions. If manufacturers are to actualise their opportunities, they need this flexibility. They also need high-quality, consistent outcomes. There is significant work underway across VET to address issues of quality. This includes new Standards for Training Packages and Standards for RTOs.

However, public and private RTOs are finding compliance and auditing regimes overwhelming and they are questioning whether the additional work will result in outcome improvements. MSA is working to minimise any additional and unnecessary impact resulting from current compliance work on its Training Packages. In most cases, additional assessment advice will be 'more information', not 'new information'.

Workforce development priorities for manufacturing

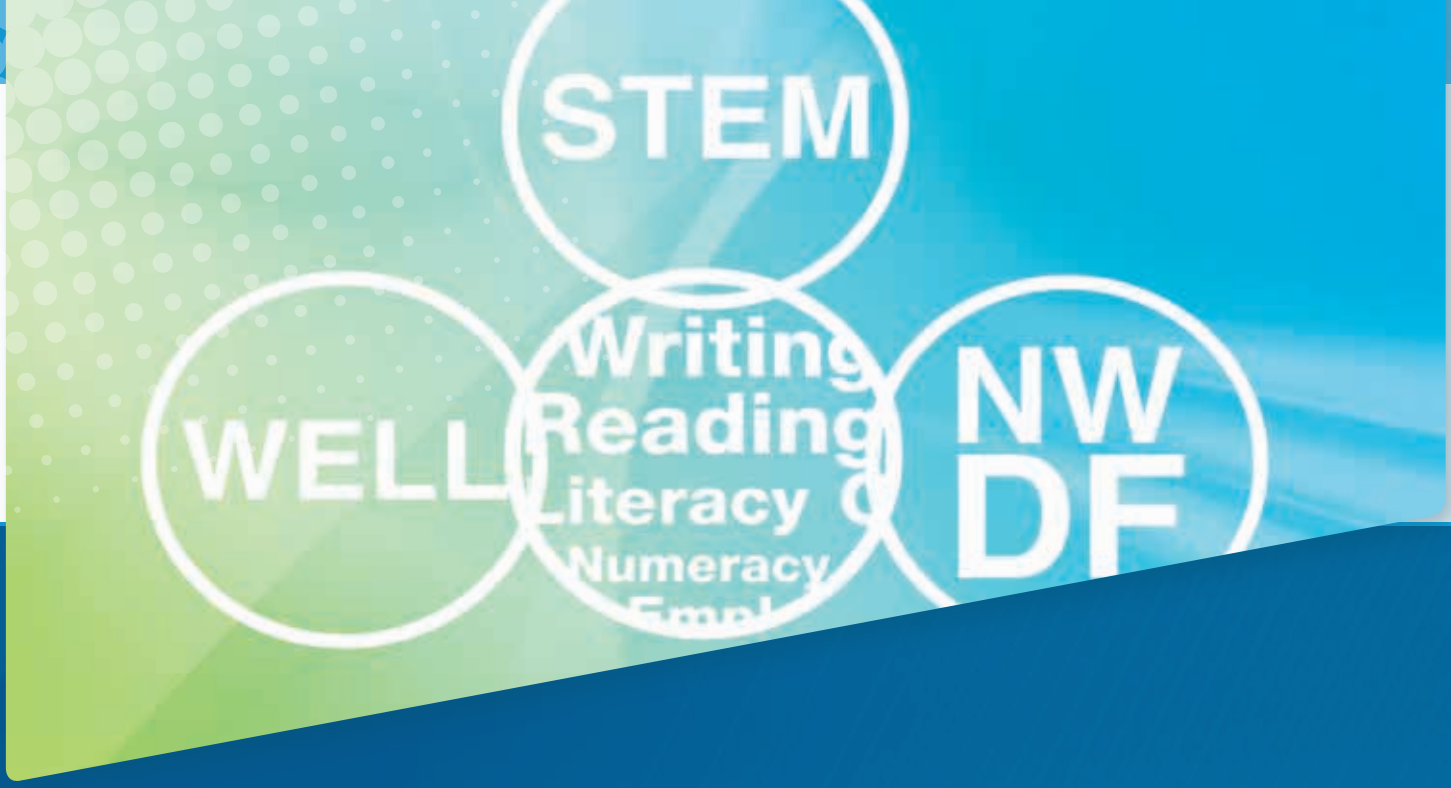
In order to help manufacturers become the competitive and dynamic operators they need to be, VET must focus on delivering:

- customised training solutions
- high-level skills
- broad-based, transferrable trade skills
- effective apprenticeship programs.

Manufacturing skills must be built on a sound base of STEM capabilities and language, literacy and numeracy (LLN) skills, and this may require additional attention to ensure training goals can be achieved.

There is much riding on the capacity of VET to deliver high-quality outcomes and VET practitioners will need additional and ongoing support to meet these demands. While many are already accessing professional development, there is a call for much more support, especially in developing skills to recognise and manage LLN needs of learners. VET needs many more specialised practitioners to underpin workforce improvements in LLN. MSA has provided welcomed focus in this area and its LLN resources and workshops have been extremely well received.

MSA is providing a wide range of very successful capacity building initiatives like this, and is also strengthening its presence as an effective broker for the National Workforce Development Fund (NWDF) and Workplace English Language and Literacy (WELL) program. MSA's role in these programs is helping to improve training outcomes and increase enterprise engagement with VET. Its work with international allies is



also adding valuable intelligence to Australian VET practice and on worker mobility and skill engagement across global manufacturing supply chains.

MSA Training Packages continue to be updated to reflect demand for both traditional and new world skills for manufacturing. This includes expanding coverage in higher-level and emerging technical skill areas and sustainability skills. Enrolments across the majority of MSA Training Packages continue to grow and are still especially strong in its Competitive Systems and Practices suite of qualifications and across process manufacturing. This reflects demand across manufacturing for efficiency improvement and the needs of the resources industry.

More detailed descriptions of sector specific conditions are provided as additional information to this report.

Ongoing commitment to continuing and improving VET work is essential to ensure that the skill needs of manufacturing are properly addressed. Amidst reforms and cost cutting, stakeholders have become nervous. In many ways, the future of VET looks similar to that of manufacturing generally; it needs to become more agile and customer-driven, focused on quality and fueled by innovation. To achieve this, it must build on the confidence that it is valued and attracts an appropriate level of national commitment and funding.

It is with this level of focus that Australia can make the best of what we have and the opportunities at hand, and make manufacturing the dynamic industry we need it to be.

MSA welcomes you to its 2014 EScan and extends gratitude for the many honest and valuable contributions. We hope it adds insight and encouragement to everyone involved in Australia's manufacturing industry.

Teamwork in action - representatives from Metalsa, MWDS & Kangan Institute.

Latest industry intelligence

In the national interest

Since 2008 MSA has reported on the state of Australian manufacturing in its annual EScans. It has discussed how manufacturing's contribution to the economy, as well as the jobs it provides, has retracted from the leading position it held ten years ago. It has spoken of the transition that enterprises have been undertaking to become more globally competitive and relevant, their focus on efficiency improvements, and product and service innovations in continually evolving, global markets. The EScans have demonstrated how resilient Australian manufacturers are and how significant their role is in the economy.

Each year, conditions have become harder for manufacturing as it navigates global conditions, and enterprises have found the years since the GFC, a particularly difficult haul. In 2013 Australia witnessed more of its biggest and finest close their doors, sending thousands of workers to the unemployment line. Meanwhile, debate about the value of manufacturing, and its future place in the Australian economy rages, fuelled further in 2013 by closure announcements from manufacturing stalwarts like Ford, Holden and Electrolux.

In its last EScan, MSA described the frustration being expressed at the lack of recognition for the value of Australian manufacturing by the public and politicians. This has peeked in 2013 as both discussed whether the $21.5 billion economic contribution the car manufacturing industry makes is a good return on a $500 million investment, not to mention the estimated 50,000 jobs it directly provides.[1] Likewise, the $62.37 million and 987 jobs Electrolux brings to New South Wales will be sorely missed.[2] The loss of big employers like Electrolux and Ford will have devastating impacts in regional towns like Orange and Geelong. Tasmania also is facing further employment woes with the exit of mine equipment manufacturer, Caterpillar. Estimates are that 1,000 direct and indirect jobs will go with it. These have been successful and important companies in Australia's economy.

Without doubt, there is room for consolidation in manufacturing, especially in some of the less efficient and unsustainable industry sectors. But without a committed long-term strategy for manufacturing, stakeholders say free market forces will throw the baby out with the bathwater. They have little confidence that investment will be transferred from traditional sectors like automotive towards alternative and emerging industries, and say there is no evidence of this occurring in the past.

1. Allen Consulting Group and Monash University. The Strategic role of the Australian Automotive Manufacturing Industry. 26th September 2013. 2. WRI. Economic Impact of Electrolux. Orange City Council & Electrolux. July 2012.

They question how healthy Australia's economy expects to be without a strong industry that actually 'makes things'.

As one CEO put it… 'there is only so long that a country can export at $1, and buy back at $8 before it goes broke'. Manufacturing is the value-add activity that builds an economy.

Amidst this picture of demise, there is a new world of opportunity emerging for Australian manufacturing. This is one where dynamic businesses develop highly customised, top quality, niche and value-added products and services for international markets. Here customer and service orientation are central in business models. Enterprises provide highly skilled jobs that are exciting and technologically focused, well paid and sought after. In this equation, industry achieves excellent return from its high-cost labour with an effective mix of modern technology, efficient work practices and high-level skills.

There are already enterprises succeeding in this space, they are the ones carving out new places in global markets. Most manufacturing enterprises are somewhere on the continuum from demise to new world reinvention. It is a critical time for the future of manufacturing. Australia needs to continually develop capacity and capability if it is to make the transition and maintain a healthy economy. Manufacturing needs to focus on developing higher levels of skills than it has in the past. These will only happen with committed leadership and a long-term, strategic approach to industry development. Manufacturing needs a VET system that is geared towards achieving this mission.

This year's EScan needs to be read in context.
The overwhelming picture in manufacturing today is one of industry decline and personal despair. The general mood is low and public perception about manufacturing, even lower. We are witnessing contraction on an unprecedented scale and the fallout and frustration is palpable. These perspectives dominate media coverage, public debate and the contributions made to this year's EScan research.

Australian manufacturers aren't looking to be carried, they want to be recognised for the important role they play in maintaining a healthy economy and lifestyle for Australians. They are calling for policy decisions that reflect the understanding that when Australia loses manufacturing capacity and capability, it also loses:

- **Income** – $102,146 million in industry value-add (2011–2012 Source: ABS), and keys to growing this exponentially, as well as $1.74 in other sectors for every $1 in manufacturing.[3]
- **Jobs** – 922,352 jobs and 2-5 jobs in other sectors, for every job in manufacturing.[4]
- **Innovation** – the breakthroughs that enterprises make to improve customer offerings.
- **Research and development (R&D)** – the massive $4.5 billion manufacturing spends every year on R&D; 24.4% of Australian business expenditure, and the largest expenditure by any industry.[5]
- **Sustainability** – solutions for a low carbon future.
- **Skills** – development of high-level skills that are in demand across the economy.
- **Self-sufficiency** – ability to respond to Australia's changing needs and priorities, now and into the future.

The messages in this year's EScan are loud and consistent across all sectors – the time is now, for a serious commitment to manufacturing. Australian manufacturers want the industry's strength and longevity to be recognised as a matter that is ***in the national interest.***

3. Government of SA Professor Goran Roos Adelaide Thinker in Residence 2010-2011. Manufacturing into the future: Summary of Recommendations. 4 Australian Bureau of Statistics, Labour Force, Australia, Detailed, Quarterly, August 2013, Table 04. Accessed August 2013. 5. http://www.abs.gov.au/ausstats/abs@.nsf/Latestproducts/8104.0Main%20features22011-12.

The manufacturing experience over 2013

Overall enterprises say that the conditions of 2013 were pretty similar to those experienced in 2012, except that they were more intense. Losses have been experienced in all sectors and resulted in thousands of redundancies. In 2011–12 there were nearly 3,000 less enterprises since 2009–10 and recent losses put employment at its lowest point yet.[6]

Enterprises are worried for their own future in this environment; they are seeing a significant loss of capacity and know that this reduces critical mass required to keep industry sectors alive in Australia. They know that when segments of the supply chain are lost to overseas suppliers, it will be extremely difficult and costly to get them back.

While manufacturing enterprises vary by sector, size, focus, business model and operating style (and each of these have their own set of strengths and challenges), all are impacted by the current business operating conditions in Australia.

The most common concerns in 2013 raised by manufacturers for MSA's research include:

- **Australia has become uncompetitive.** The value of the Australian dollar, the high level of regulation and high operating costs, have made Australia uncompetitive internationally. This has had ramifications in foreign investment, domestic sales and exports, and enterprises across all sectors say they are losing ground each year against lower cost competitors.

- **Slowdown in mining and resources projects continues to impact supply chains.** The resources sector is still supporting many suppliers, but this appears to be a much smaller contingent, with many still impacted by the sudden slowdown of projects in 2012. Deloitte Access Economics reports that the total value of investment projects across the nation fell by $3.4 billion or 5.7% from June 2012 to 2013.[7]

Enterprises report that dependency on resources projects made them vulnerable and they have looked to diversify in 2013 to mange this risk.

There are also reports of extensive redundancies as a result. The Australasian Institute of Mining and Metallurgy claims unemployment in its members rose by 9.2% from 2012 to 2013, and underemployment increased three-fold. MSA has also heard of extensive redundancies amongst engineers and across suppliers as a result of the slowdown. Apprenticeships have also taken a big hit in this environment with many contracts cancelled.

- **Tight energy market is adding burden.** Australian manufacturers, especially those on the east coast, are finding it increasingly difficult to secure affordable domestic gas supply. They are paying around three times the price they have in the recent past, with few competitive options available. Natural gas prices in eastern Australia have already increased by more than 70 per cent and are likely to go higher.[8] Rising energy costs are proving to be a final blow for some local enterprises and a deciding factor for multinational companies to take their operations elsewhere.

The focus on meeting export commitments in a time of slowing production has also impacted supply, with businesses struggling to secure new gas contracts according to a survey conducted by the Australian Industry Group (Ai Group).[9] The survey concluded that the gas market is tight, prices are escalating at a rapid speed and there is little competition. Industry is calling for a policy response to loosen the burden that is straining the viability of local operations by adding further cost and insecurity. Enterprises note that the US position to use its shale gas boom to secure cheap gas for local industry (within a 'national interest criteria'), has provided 'competitive stimulus' to US enterprises and is a major factor in the return of manufacturing – a move that has seen 500,000 manufacturing jobs created in the past three years.[10]

6. Ibid. 7. Deloitte Access Economics. Investment Monitor September 2013: The Trouble with Transition. 8. Prime Minister's Manufacturing Taskforce 2012 9. The Australian Industry Group. Energy shock: the gas crunch is here. July 2013. 10. http://business.time.com/2013/04/11/how-made-in-the-usa-is-making-a-comeback/#ixzz2evZKe119.

Australian manufacturers, especially those on the east coast, are finding it increasingly difficult to secure affordable domestic gas supply.

- **Australia losing value-add opportunity.** Enterprises throughout manufacturing sectors are frustrated that Australia does not invest more into adding value to its raw materials. They believe that Australia should focus on adding value rather than cutting costs, and engage its supply chains to generate greater value from its extensive raw materials base.

  According to the Plastics and Chemicals Industry Association (PACIA), **by exporting gas, rather than value-adding through production, Australia gives up $255 million in lost industrial output for every $12 million gained in export output.**[11] PACIA argues that Australian enterprises are well equipped to add value (it estimates about eight times) to the raw materials produced by the booming LNG industry. It believes Australia should be taking note of the value-add opportunities being pursued in other countries. Qatar (the world's leading gas supplier) for example, is now investing heavily in its petrochemical sector.

- Australia's iron ore industry is another area where significant value-add opportunity is lost. Estimates are that the value of Australia's extensive iron ore reserves would be multiplied by 100 with domestic value-add activity.[12] Expectations of increasing investment in the Western Australian iron ore boom by BHP Billiton and Rio Tinto could add further potential in this area.

> "We are giving away the opportunity to create downstream, value-adding industries. And, with the gas we are giving away to Asia, tens of thousands of jobs that should be there for our children."[13]

- **Procurement practices not reflecting real value**
  Manufacturers talk about the loss of capacity and capability that results from outsourcing production and importing products, components and skills. They say that procurement practices are driven by cost without real regard for value, and stress the need to improve local content, particularly in procurement at all levels of government and for resources projects. Enterprises believe that a more thorough examination of the true cost and value proposition in procurement would shed new light on the conversation.

  For example, leasing of Australian-made cars at local, state and federal government levels would have significantly boosted the car industry, helping to develop and keep skills, jobs and innovative potential in Australia. Industry representatives say the loss of this capacity far outweighs any short-term cost savings.

  There has been much said about Australian enterprises and workers missing out on the benefits of the resources boom – indeed local enterprises say things are worse in 2013 than they have ever been and that calls for local content are not being heard in resources projects.

  Enterprises continue to say that contract requirements tend to rule them out, for example, they are too large, demand extensive compliance conditions without offering any work security, or even specify imported components, and that multinationals regularly bring entire supply chains with them. Some companies are using Australian Government development money to source fabrication work from overseas. Enterprises say that not only are procurement practices unfair, but that the gap between cost and value is getting bigger.

  MSA has heard lots of examples – steelwork imported from China for Perth Airport that was condemned on arrival (even this didn't stop the second stage contract also going to Chinese fabricators); project outcomes that fail to meet maintenance standards; and project management records of reinstatements, replacements and repairs. One stakeholder suggested that if local workers stopped repairing the problems in imported components, and sent them back for replacement or fixing, the true cost of importing 'cheap' components would be more apparent. But this won't happen, because local fabricators depend on this repair work – it's the only work they are getting.

11. PACIA Adding Value. The critical, enabling role of the chemicals and plastics industry for Australia's future. Year? 12. Future Manufacturing Industry Innovation Council, trends in manufacturing to 2020. A foresighting discussion paper. September 2011. DIISR. 13. James Fazzino, CEO of a global fertiliser and explosives manufacturer, discussing his decision to invest $US850 million ($940 million) in a new ammonia plant in the United States instead of Australia. http://www.afr.com/p/national/how_louisiana_beat_newcastle_to_lk3ictRwSzt0QOA4Rb324H.

Another major hidden cost is in the loss of work hours for Australian workers. Australia's overall work contribution to some of these projects is minimal. For example, in Chevron's Gorgon Project, off the northwest coast of Western Australia, Australian workers got few of the total work hours. One industry estimate is that the Gorgon Project recruited 51 million work hours from overseas contractors. Similar stories come from Gladstone where Australia's share of a gas project was around $4.5 million, out of an overall $45 million. There is little real analysis available to assess the true cost of enabling work to be completed by overseas contractors; the loss in federal, state and territory tax revenue; market share; jobs or in developing Australia's long-term capacity.

Industry is calling for better education and advocacy in high-level procurement decision making, to ensure the cost/value proposition is properly considered and that the benefits of buying Australian are clearly promoted. Australian contractors can meet Australia's high standards of work, in both manufacture and ongoing maintenance, and provide quick response to emerging project needs – helping to curb the cost and time blowouts that are featuring in many resources projects.

- **Double standards don't favour Australian enterprises.** Across MSA's sectors, enterprises are in competition with imports that don't comply with the same standards that they are required to meet. Whether it is clothing producers meeting outworker legislation, or furniture manufacturers complying with protected timber regulations or the application of a range of licensing or labeling requirements, Australian enterprises believe that this double standard approach to compliance adds cost and further affects their ability to compete. According to Ai Group, 92% of companies that responded to its survey reported non-conforming products in their supply chains, and almost half reported lost revenue, reduced margins or lower employment numbers due to non-conforming products in the steel, electrical, glass and aluminium, and engineered wood sectors.[14]

This issue has also been commonly raised in MSA's research with regard to resource projects. Industry stakeholders talk of foreign owned projects that have imported labour, designs and components to construct plants that don't meet Australian standards. For example, one project that was designed overseas resulted in a construction that wouldn't withstand local cyclonic conditions.

Industry is concerned that substandard facilities will become Australia's white elephants. One industry representative expressed concern that it will only be when 'blood is shed' by personal injury or an environmental accident (some are tanks filled with chemicals), that matters of quality and meeting standards will gain importance.

Enterprises want Australian standards to be required and enforced for all suppliers, that is, the same standards that are required of them. They don't understand why overseas-owned companies can apply their own rules in Australia. Ai Group points to inadequate surveillance, audit checks, testing, verification and enforcement.[15]

Meanwhile it is often engineers that carry the compliance risk. They are the ones whose designs are compromised by financiers and builders under pressure to reduce costs. They are the ones insurance companies will turn to if there are accidents.

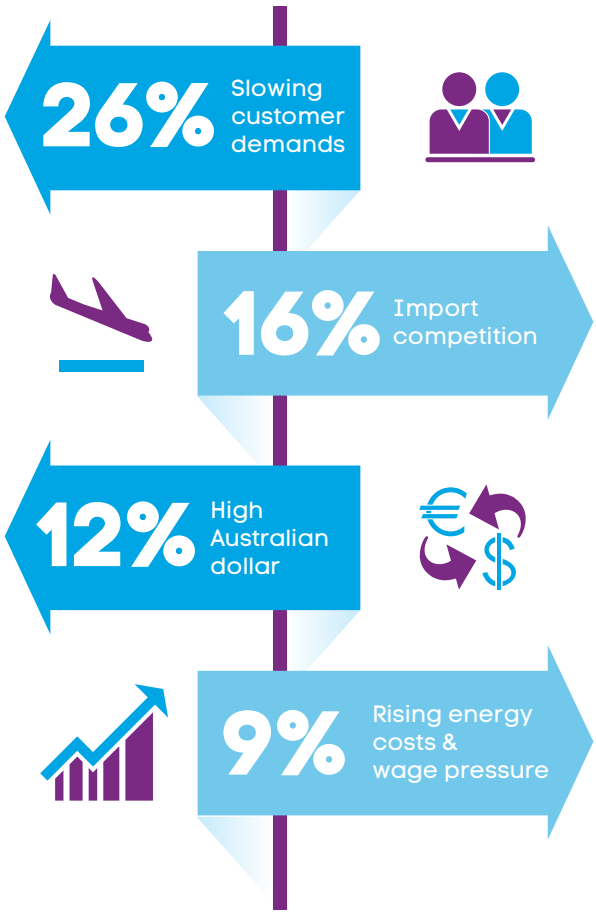
- **Australia's comparative position is worsening.** Production in Australia is now around four times the cost of Asia, twice that of Europe and 1.5 times the US. Australia now ranks 21st in global competitiveness,[16] (down one place from last year) and fallen from 13th out of 148 countries in 2011–12 to 54th in 2013–14 in labour market efficiency.[17] Enterprises say that failure to address these issues will be catastrophic for Australia's economy.

14. The Australian Industry Group. The quest for a level playing field: The non-conforming building products dilemma. November 2013. 15. ibid. 16. World Economic Forum (WEF) Global Competitiveness Report 2013-14.
17. http://www.industrysearch.com.au/Aust-s-international-cost-competitiveness-still-slipping/f/12998.

Industry is calling for better education and advocacy in high-level procurement decision making, to ensure the cost/value proposition is properly considered and that the benefits of buying Australian are clearly promoted.

MSA's findings are consistent with other research. Ai Group's National CEO Survey found that the key concerns of manufacturing enterprises in 2013 were slowing customer demand (26%), import competition (16%), the high value of the Australian dollar (12%), and rising energy costs and wage pressures (9%).[18] More than half expected conditions to deteriorate in 2013, and according to MSA's research later in 2013, they were right. While MSA's EScan survey indicated a fairly even balance in expected business performance from 2012 to 2013, with a similar number saying performance was the same, better and worse, interviews and anecdotal evidence point more strongly to outcomes being worse in 2013.

Key manufacturing concerns



Other highlight impacts in 2013 include:

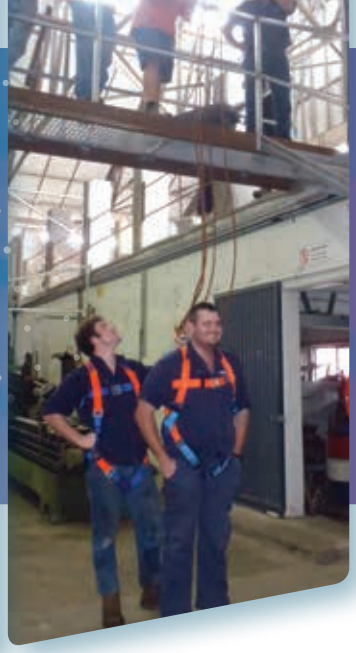
Federal election. Pre-election uncertainty put much of the economy in a holding pattern over 2013 as enterprises waited for the outcome so that they could adjust their plans accordingly. This impacted all aspects of business, including training, recruitment and investment. In its EScan research, MSA asked enterprises what their priorities were for the incoming government. Responses included a call to start infrastructure projects, remove red tape, support small business, proactively support innovation and sustainable industry developments, and to stimulate public/private partnerships. Overall, industry is looking for stability; they are frustrated by constant change and need consistent policy to allow them to plan long-term strategies.

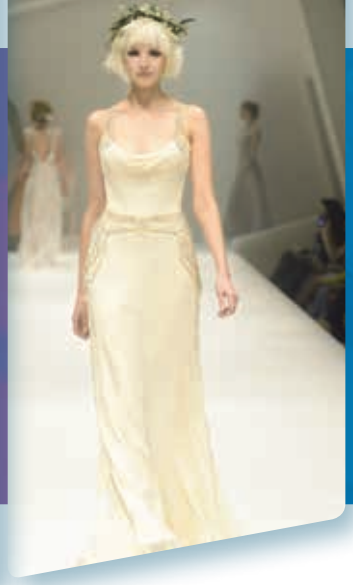
Defence seeks release from the 'valley of death'. The new Defence White Paper[19] released in 2013 provides some assurance for the future of the Defence industry with a range of construction projects identified. The industry has called for projects to be timed to avoid a gap in project work from 2015. It argues that if this work shortfall is not addressed, it would lose thousands of high-skilled jobs as well as critical capacity to deliver on future projects. Defence represents another manufacturing sector that engages significant support from local supply chains.

Bangladesh factory disaster. The 2013 collapse of the Rana Plaza building in Bangladesh resulted in the tragic deaths of more than 1,000 garment workers and the rescue of thousands more. The disaster brought the clothing manufacture industry under international examination and consumers were horrified to learn about the full cost of cheap imported clothing. The tragedy created demand for greater transparency and accountability from western corporations, and for measures to prevent this happening again. It also raised debate about the sustainability of gaining cost advantage from developing nations.

Reprieve to skill shortages. Skill shortages that featured strongly in previous years have reduced in keeping with slowing demand. Specific skill shortages, especially in trade and technical areas, however, still remain high. Even here though there has been some easing in the pressure with resources projects stalled or shifting to operational phases.

18. Australian Industry Group. National CEO Survey. Business prospects in 2013: Australia's gap year? 19. Australian Government. Department of Defence. Defence Paper 2013.





Last year MSA reported on the engineering skills shortage crisis that was hindering economic growth. This year the picture looks quite different. MSA has heard that approximately 8,500 engineers were retrenched in Western Australia over the past 12 months following the slowdown in resources and mining projects. These workers are now competing with the new graduates that have answered the call to address skill shortages. Without strategic, committed, long-term planning for the manufacturing industry, this boom/bust employment cycle will continue.

The skills gap now is reported to be more in the technician space and many enterprises say they look to graduate engineers to fill these jobs.

Skills still a priority concern. While the slowdown in mining and resources projects has tempered the sense of urgency about predicted skill shortages that was foremost 18 months ago, the sector is mindful that a strategic approach to workforce development is still critical. The looming retirement of older workers is a ticking time bomb for unprepared employers who stand to lose their most experienced workers. New apprentice graduates will not, in the short term, be able to replace the skills and knowledge developed in 30–40 year careers.

At the same time, enterprises are being pushed to increase productivity, reduce costs and optimise their workforce. This means that the need for efficient and well-targeted skills programs is as important as ever.

In order to align skills development with workplace need, enterprises need to understand what skills they have and what they will need into the future. They need to conduct thorough skills auditing of their workforce and determine upskilling programs that target their skill gaps.

Oil and gas projects still dominate. LNG continues to be a highlight sector within process manufacturing with more than A$200 billion in LNG projects currently underway in Australia. However, high production costs and international pricing pressures have put doubt over many future developments. This uncertainty is affecting confidence across the sector and down manufacturing supply chains.

The end of 2013 did see some positive growth for manufacturing, with the Performance of Manufacturing Index (Australian PMI®) in September moving into expansion for the first time since June 2011, driven especially by new orders in the food, beverages and tobacco sub-sector. The petroleum, coal, chemicals and rubber products sub-sector shows the strongest performance at 54.1 points.[20]

Shrinking figures across manufacturing are not surprising. The industry has been changing, consolidating and becoming more automated, and enterprises are working smarter and more efficiently than ever. Figures also reflect the trend in moving production operations (and jobs) out of Australia to cheaper locations. Manufacturing is the fourth largest employing sector in Australia, and has a significant multiplier effect across the economy in terms of jobs and income generation.

From here, Australian manufacturing will continue to reshape to meet the challenges of today's global economy. Its future will depend on an ability to capitalise on specific opportunities in modern manufacturing.

20. Australian Industry Group Australian Performance of Manufacturing Index (Australian PMI®) September 2013.

Enterprises are often manufacturing in Australia to ensure they have tight control over production processes and the quality of outcomes.

Opportunities for Australian manufacturing

There are distinct opportunities that are emerging as the way forward for Australian manufacturers.

Niche, specialised, high quality and global
While Australian manufacturers can't compete with low-cost manufacturing countries, they can excel in supplying global markets with the products and services not catered for in mass production. They can produce high quality and short runs, and they are agile and able to respond quickly to changes in market demand and production specifications. In a world of short business cycles, quick product turnover, increasing demand for innovation, speed and customisation, Australia is well positioned to succeed.

It is also important to note that increasingly, Australian manufacturers that operate in these markets are small and micro operations. This has implications for how the industry operates as a whole, and the kind of support it needs. For example, MSA has heard that some small and medium enterprises (SMEs) have been unable to access business advice via the very successful Enterprise Connect program because their annual turnover is less than the $1.5 million threshold. It also raises concern about viability of training provision.

Global markets provide extensive opportunity for 'micro-multinationals' that export niche and specialised products and already Australian enterprises, for example manufacturers of medical and surgical equipment, technical textiles, customised fashion items, and biotechnology products, are performing well in this space. These enterprises are often manufacturing in Australia to ensure they have tight control over production processes and the quality of outcomes.

"Specialisation and focus make a market small. Globalisation makes it big."[21]

Skill implications: *Manufacturers need high-level technical skills in specialised areas. They need solid design and creativity skills and ability to market their products and establish brand identity. Knowledge-intensive products will require access to training in thin market areas and continual upskilling to ensure the latest best practice is applied in operations. Often these enterprises are micro sized or small, adding further challenge to achieving training viability for both enterprises and RTOs. 'Micro-multinationals' also need skills in navigating and developing global markets, and ability to perform in the digital economy. Lean and agile production management capabilities are also critical.*

21. http://www.manmonthly.com.au/features/globalisationmeetsspecialisation-thehiddenchampion?utm_source=Cirrus+Media+Newsletters&utm_campaign=71af08f9e0-fe913f1856_57957&utm_medium=email&utm_term=0_fe913f1856-71af08f9e0-59143797.

Customer driven, customer focused

Across MSA sectors, enterprises are increasing their ability to provide customised products and services. Twenty-one per cent of respondents to MSA's EScan survey said that they offered customisation as part of their service. Today's consumer savvy customers want greater input into the design and production specifications of their clothing, kitchens, bathrooms, furniture and components. 'Custom-made' and 'mass customisation' are providing competitive advantage for Australian enterprises. This focus will also drive innovation as they strive to continually improve their offering to customers.

Skill implications: *Manufacturers need excellent customer service skills and ability to attune the business towards a customer-centricity. This includes a deep understanding of the needs of current markets and those in emerging markets. It requires skills in engaging customer input and collaborating with stakeholders through a variety of techniques, for example, open source design. They need high-level technical knowledge and expertise and ability to apply this to product and service problems. Skills in design and production technologies, such as computer-aided design (CAD) and computer-aided manufacturing (CAM) are critical to responding efficiently to these demands, as is an ability to engage technology breakthroughs, such as rapid manufacturing or 3D printing, which will take customisation to a whole new level.*

Service orientation

Another growing trend is incorporating services with existing products. Recent research conducted in the UK found that manufacturers that incorporate useful services can realise business growth of 5 to 10% a year, as well as reduce costs for their customers by up to 30%, by streamlining their processes.[22]

Examples include the security screen manufacturer who installs and repairs; original equipment manufacturers that provide ongoing maintenance and training support; and manufacturers that provide through-life support from product development to disposal.

Manufacturers can develop competitive advantage by providing innovative product and service solutions. Not only can these enterprises innovate and develop products, but they can also sell, transport, lease, replace, repair, improve, recycle and dispose of their product. Their customers know they have access to comprehensive services and the latest and best product choices.

Skill implications: *Manufacturers need to adjust their business models to focus on how they can provide products and services that cement long-term relationships with their customers. They need to develop a deep understanding of the needs of their customers, as well as those in new markets, and be skilled in developing service contracts. They need high-level engineering and technology skills so that they can continually improve their product offerings, and be able to protect their IP.*

22. Aston Business School. Servitization impact study: How UK based manufacturing organisations are transforming themselves to compete through advanced services. 2013. Page 3.

'Custom-made' and 'mass customisation' are providing competitive advantage for Australian enterprises, and this focus will drive innovation.

"Servitization is the concept of manufacturers offering services tightly coupled to their products. It's about moving from a transactional (just sell a product) to a relationship based business model (delivering a capability) featuring long-term, incentivized, 'pay-as-you-go' contracts." [23]

Value-adding

Another growth area is in adding value to pre-made products, for example, adding embroidery or embellishment to clothing items or recycling and redesigning clothes.

Value-adding is also about processing raw materials, whether to the next stage or to final production. While this is essentially at the heart of most manufacturing, it has special mention here with regard to the development of value- add industries for Australia's raw materials, such as gas and iron ore. Defence and automotive industries also add significant value. There is extensive opportunity for Australian manufacturers to increase value-add activity and outcomes with a more strategic focus on key industries.

Skill implications: *Australia already has many of the skills applied in value-adding activity. However, for many niche or specialised areas, the thin market issue can still be a barrier to accessing training.*

Advanced manufacturing

Increasingly, manufacturers are turning to 'new tech' adoption, adaptation of technology processes and investment in human capital to gain competitive advantage. Advanced manufacturing technologies, such as robotics, additive manufacturing and 3D printing, are revolutionising manufacturing with new abilities to design and manufacture complex, customised products with short lead times, minimal tooling and wastage, and low labour demand. Applications will penetrate markets in aerospace, architecture, automotive, medicine and dentistry, Defence, energy, education and more. The global market for these products is growing at about 16 per cent per annum and is projected to reach US$3.5bn by 2015.[24]

There are still many challenges to be addressed in actualising the full potential of these technologies, and these are being explored in important research initiatives at the Advanced Manufacturing Precinct at RMIT, Victoria, the Victorian Centre for Direct Manufacturing and Monash University.

Other important technology developments for manufacturing include application of assisted manufacturing technologies, such as robotics and worker augmentation systems. The CSIRO is working on developments in these areas.

Technologies like these stand to revolutionise what is possible in the design and manufacture of everyday and specialised products and holds potential to overcome many of the issues faced by Australian enterprises. It is important that enterprises are able to efficiently access and deploy them in their operations.

Advanced manufacturing processes that engage high productivity and efficiency practices are also essential in supporting the adoption of these technologies and improving enterprise competitiveness.

Skill implications: *Furthering development of advanced manufacturing technologies relies on high-level application of STEM skills, as well as the ability to integrate advances into manufacturing practice. As these technologies become more widespread, skill development needs will increase in technology-driven design and operation. Enterprises also need to continually develop their human capital to ensure workplace practice maximises productivity and efficiency gains.*

23. ibid. Page 2. 24. Prof Milan Brandt. Advanced Manufacturing Precinct. RMIT University. Growing push for additive manufacturing. Manufacturers Monthly. 27 September, 2013. file://localhost/Users/kerrieclarke/Desktop/MSA%20E%20Scan%202014/Manufacturing/Read/Growing%20push%20for%20additive%20manufacturing%20%20%20Manufacturers%20Monthly.html.

Technology investment

Investing in technology is central to lifting the efficiency and competitiveness of Australian manufacturing. This is not only in process improvement, for example, with technologies, such as CAD, CAM, 3D printing and production automation, but across all aspects of the business.

Ai Group research confirms that investment in technology makes a significant impact on enterprise productivity. It found that in 2012, 33% of businesses that invested in new technologies reported labour productivity improved compared with 16% of businesses that did not invest.[25] It also found that decisions to invest were often driven by employee skill and knowledge and by that of others in their supply chain.

Computing technologies and access to fast internet offer critical productivity gains for manufacturers that need to move large amounts of complex data, for example, customer data collections, digital media, social media, e-commerce gateways, operational control and tracking systems, asset management inventories, and so on. But Ai Group's 2013 Business Prospects Survey found that less than 50% of companies are confident that they can take advantage of the benefits of high-speed broadband, especially SMEs.[26] Innovation Business Skills Australia (IBSA) also concluded that small businesses are at risk of digital exclusion,[27] while CSIRO research found that barely half of Australian businesses even have a website.[28] These companies need to develop this capability.

Skill implications: *Manufacturers must be equipped to take advantage of the benefits provided by technology developments. There are still significant numbers that are not. Increasing automation reduces demand in some areas for low skilled work and places a greater focus on high-level skills needed to operate and manage more sophisticated equipment. Enterprises also need access to the skills required to repair, retrofit and overhaul machines and equipment. Often this is purchased from overseas suppliers who embed ongoing maintenance and service in the sales 'package' which is managed by flying in technicians or importing replacement componentry. Australia needs to ensure that dependence on original equipment manufacturers (OEMs) does not hinder productivity and its ability to develop these skills. Upskilling programs are essential not only in the use of production technologies, but also in digital and information technologies. IBSA's research found that as well as SMEs, many disadvantaged groups were particularly affected by low digital literacy. These must be targeted in development programs and IBSA has identified a range of key Skill Sets. Young people also need to be better engaged with the digital elements of businesses, they have much to offer in this area. Continual upskilling is essential – the speed of technology upgrades makes skills quickly outdated. This also puts pressure on ensuring that workers have the adequate LLN and efficiency skills to manage life-long learning and continuous improvement.*

25. The Australian Industry Group. National CEO Survey. Ready or Not? Technology Investment and Productivity in Australian businesses. June 2013. 26. ibid. 27. IBSA. Digital literacy and e-skills: participation in the digital economy. February 2013. 28. http://www.theaustralian.com.au/executive-living/nbn-not-automatic-training-windfall-csiro/story-e6frg9zo-1226779249288?sv=578badf049e0499b9a240a7ba20e8781#.UqZI-xf3KxM.email.

Enterprises are seeking innovation through partnerships and collaboration with allies, suppliers, competitors and especially with their customers.

Research, development (R&D) and innovation

R&D is central to innovation, productivity improvement and securing competitive advantage, and requires an unwavering commitment at all levels of industry – regardless of the current state of the economy. Manufacturers are significant contributors to R&D, they are the biggest investors of all industries.

While SMEs are major contributors of innovation into Australian manufacturing, the majority of R&D investment takes place within larger companies and research institutions or centres. There is concern that the loss of large multinationals and critical mass in manufacturing will limit advances resulting from the R&D investment of these companies. On top of this, funding for the Australian Research Council's Linkage grants was cut in late 2013. These were the only research grants that mandated research-industry partnerships. The loss of these grants is expected to further constrain SME access to R&D breakthroughs and limit engagement between research institutions and industry.

Increasingly, enterprises are seeking innovation through partnerships and collaboration with allies, suppliers, competitors and especially with their customers. Workers also need to collaborate across disciplines in order to problem solve and innovate.

Skill implications: *Enterprises need to continually develop their capacity for R&D, as well as their ability to efficiently deploy innovations in their operations and products. They need designers and product developers with strong technical skills that help them solve product problems, re-engineer and customise products and create valued improvements. The ability to collaborate with other stakeholders and across multiple disciplines is another important innovation skill for modern manufacturing, as is protecting IP. Collaboration will also require individuals and organisations to effectively manage diversity and cultural differences. They also need to be able to quickly engage new and emerging technologies to build their competitive advantage.*

Industry alliances and cross-industry collaboration

Not only are enterprises working more closely with their customers, but also with other businesses, either in their supply chain or within the sector. They are strengthening these relationships in order to identify and develop innovations, improve supply efficiencies and mitigate risk. According to KPMG research, there is a trend for unprecedented collaboration in innovative solutions across the value chain.[29] Manufacturers are also reaping the benefits of regional clusters that collaborate on developments. Establishing a concentration of compatible enterprises to support cross-pollination and development of capacity is more common overseas, for example, in Germany, China and the US. However, there is evidence of a growing drive in Australia to foster collaboration between enterprises in regional centres.

MSA is also increasingly hearing of industry collaborations that target training needs – this appears to be in response to a reduction in training options, particularly in thin market areas. Examples include enterprises sharing apprentices, trainers sharing facilities, and associations working together. Perhaps, in the future we will even see the sharing of skilled workers…

The past year has seen the establishment of groups, such as the Manufacturing & Engineering Institute of Australia (MEIA), Manufacturing Industry Innovation, Cooperative Research Centre (CRC) and the Australian Advanced Manufacturing Council, that will help to focus cross-pollination between Australian manufacturers.

Skill implications: *Enterprises need to forge the relationships that will help their business grow in new markets. This is often an issue of leadership and vision. Relationship building and management of collaborative projects, including contracting and IP arrangements may also be required. Seeking suitable alliances also requires enterprises to understand what their business objectives are, as well as the capacity they have and require, to achieve these objectives. Skills in developing and managing strong, global supply chains continue to be critical for manufacturing. These include digital literacy, communication skills, and ability to operate in different trade and cultural environments.*

29. KPMG report 'Global Manufacturing Outlook: Fostering Growth Through Innovation'.

Diversification

Enterprises, even regions, are increasingly looking to diversify and reduce overdependence on a narrow product range or market. Quickly shifting or shrinking markets have left enterprises vulnerable, and they have struggled to transition to other areas. Those involved in steel, resources and automotive sectors have especially expressed the need to widen their focus. Enterprises also argue that greater investment into value-add industries would also help to soften the impact when Australia's commodity markets change.

MSA is increasingly hearing of manufacturers that have leveraged their capabilities to extend into new products and markets.

Skill implications: *Enterprises need to be agile and able to respond to shifting market needs. To achieve this, they need capacity to identify market opportunity, and efficiently design, develop and market new products and services. They need skills that can be transferred and applied to different products or processes. Employers are increasingly talking about the need for a solid base of broad trade skills, where the worker understands the principles of his/her trade enough to be able to apply their skills to various problems and disciplines. In MSA's EScan survey, 48% said that this kind of broad-based skill was an important priority for their business. It is essential that technical and trade outcomes provide this workforce flexibility.*

Sustainability

Sustainability continues to present growing opportunities for enterprises both in the provision of sustainable products and services, as well as sustainability improvements in business practice. Customers are demanding greater transparency and accountability throughout supply chains and in corporate practice. Markets and workers around the world are demanding greater focus on corporate social responsibility (CSR).
As resources become scarce, the pressure for efficiency and using more sustainable materials is increasing.

Manufacturing enterprises have been improving efficiencies and minimising waste for years, and this work is still evidenced in the extent of training programs in Competitive Systems and Practices. Further initiatives to reduce carbon emissions seem to have slowed recently as government leadership in this area has waned. Enterprises have been waiting for strong policy direction, and ongoing debate about carbon tax has stalled initiatives. An Ai Group survey found that 70 per cent of businesses had not reduced their carbon intensity in response to the carbon tax since its introduction in July 2012. They had either already adopted energy efficiency measures, had difficulty accessing funds for further initiatives or were expecting carbon prices to be lowered or dropped.[30] Government policy will be critical if further gains in sustainability are to be achieved. It is unclear what impact the current government approach to carbon mitigation will have on enterprise action.

The drivers for increased sustainability will not decline. Reduced availability of resources and the growing importance of achieving a low carbon economy are international priorities.

30. Australian Industry Group Survey: Business picks up carbon tax bill June 2013.

Australia is geographically well located and has the human and physical resources, skills and knowledge to meet Asia's increasing demand for high-quality goods and services.

Skill implications: *Improving efficiencies and minimising waste continue to be important capabilities for manufacturing in improving their sustainability. Further to this manufacturers need access to R&D and a supportive, innovative environment to develop new sustainable products and services. MSA is currently responding to increased demand for CSR skills with additional units of competency within its MSS11 Sustainability Training Package.*

Developing markets

Continued growth across Asia is one of the most significant opportunities for manufacturing and one that gives rise to all the others already listed. Australia is geographically well located and has the human and physical resources, skills and knowledge to meet Asia's increasing demand for high-quality goods and services. As developing markets increase in affluence, the demand for higher quality and more customised products will increase. This will expand opportunity for Australian manufactures to provide the niche products that are not catered for in mass production. Other developing markets in Brazil, Russia, India and Africa also present potential markets for Australia's niche products and services, as do emerging markets in Peru, Columbia, Turkey and Malaysia (identified as high growth markets by the International Monetary Fund).[31]

Skill implications: *Manufacturers need to continue to develop linkages with markets in developing countries, especially Asia. This includes capabilities in achieving high standard supply, production and distribution chains and the cultural skills required to achieve these. As less than half (43%) of EScan survey respondents said that they currently do business with Asia, further support in this area is required to fully take advantage of the opportunities. Enterprises also need to understand the trade conditions and agreements of the region they are aiming to operate in.*

With many thousands of manufacturing jobs now gone, and many more expected to go in the near future, it is critical that what remains of Australian manufacturing is efficient and highly productive. This will depend on ensuring that the right skills are available when and where they are needed. It will also require a flexible approach to learning and development to effectively manage the staggering level of change in today's businesses. Ultimately the quality of our human capital is key to realising manufacturing opportunities. Australia needs skilled workers to build a productive, competitive and innovative industry. The question is whether the VET system will be agile and responsive enough to deliver this.

"Much greater attention must be given to agility, connectivity, collaboration and creativity in order to provide a flexible solution for manufacturing industry in this country." [32]

31. Canadean Ltd. Specialist Retailers in Emerging Markets to 2016: Market Guide August 1, 2012 http://blog.marketresearch.com/blog-home-page/bid/324167/5-Emerging-Markets-That-Are-Not-On-Your-Radar.
32. CEO of Siemens Australia and New Zealand, and current chair of Manufacturing Excellence Taskforce of Australia (known as META), Albert Goller, http://www.manmonthly.com.au/features/growingpushforadditivemanufacturing#.UkUUX33kBQA.email.

VET environment

Reforms still landing

The dust is still settling in the new VET landscape as stakeholders grapple with unprecedented change over the last couple of years. Last year, MSA reported that there were high levels of stress amongst VET practitioners as they navigate the changes as well as confusion about impacts, and these are again evident this year. The last 12 months has seen entire TAFE departments closed, teachers lose jobs and increased casualisation of the VET workforce.

While some states and territories are yet to implement reforms, others are starting to get a picture of how entitlement models and funding regimes will influence VET practice. Details of VET systems vary across the country, however, by early 2014 all will have embraced Commonwealth imperatives for:

- national training entitlement for a government subsidised training place
- income-contingent loans
- greater regulation and validation of training providers
- improved access to information
- strategies to improve completion rates
- increased measurement of VET activity.

Victorian reforms hold the longest history, with the Victorian Training Guarantee (VTG), the state's student entitlement program, first introduced in 2008. Over the five years to 2012, the state claims to have developed a more market-based and responsive vocational training system. Enrolments in manufacturing-related, government subsidised training have increased by 54%, and apprentices and trainees are up by 96%[33] *(note: figures include food production and pulp and paper manufacturing)*. Victorian 2012 outcomes also claim an increase in female and culturally and linguistically diverse (CALD) enrolments in manufacturing qualifications. These are encouraging signs for those still to transition into new systems.

However, Victorian reforms have also demonstrated the risk in unbridled market forces, including a $300m budget blowout and oversubscription to training in areas that hold minimal value in terms of economic development and occupational opportunity. Since this experience, Victoria and other states and territories have been adjusting funding allocation and levels to align with their state economic priorities.

Funding driving training

The new funding directives have caused many to comment that vocational training is now driven by funding, rather than industry need. While it could be argued that funding support has long been a strong influence in employers' uptake of training opportunities and what courses RTOs will offer, there is concern that current regimes have exacerbated this.

33. DEECD. Manufacturing report. 2013.

Manufacturing has many high-cost courses and thin market areas that don't fit within the new financial priorities. Reductions in funding subsidies in some areas have also had an impact. MSA questioned the potential effects new funding allocations would have on manufacturing-related training programs in last year's EScan, and again raises this as a significant concern.

In MSA's EScan survey, 17% of RTOs said that they had dropped some MSA qualifications from delivery over the last 12 months. Recent discontinuations include important areas like RMIT's Engineering - Mechanical Trade program and Victoria University's boat building courses. MSA holds grave concerns on the future viability of relatively high-cost VET programs, such as those in engineering, if this cost-cutting continues. Other closures have been flagged, such as locksmithing and jewellery manufacturing. While some rationalisation in the provider market may be warranted, a continuation of this may lead to a situation where development of skills that are critical to our economy and for manufacturing to pursue new opportunities, may no longer be available in the public domain.

A further impact of the student entitlement model roll-out in Victoria was the significant reduction in publically funded student places in higher VET programs. While many Diploma and Advanced Diploma programs are aimed at furthering VET studies, they are important in manufacturing's transition into advanced and innovative operations. Many of them are also directly relevant as entry-level qualifications for some occupations, such as engineering technicians.

Another concern is that funding is often based on a 'typical combination' of units of competency, which appears to be at odds with flexibility drivers for Training Packages. Also, when the base price for training delivery remains unchanged regardless of the mode, it disadvantages more thorough, hands-on training and investment in quality equipment. Innovation in delivery methods and workplace-based training and assessment also becomes cost prohibitive.

For example, road, infrastructure and construction sectors are calling out for laboratory operations skills, particularly at the Certificate IV level, but without funding incentives for existing workers, progress may be thwarted. Likewise, there is strong demand for skills in sustainability and environmental monitoring, but these courses are less appealing for RTOs that may focus on less costly courses. Higher-level qualifications across manufacturing will be impacted by removal of subsidies.

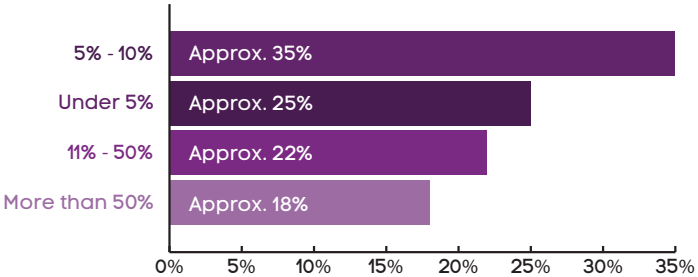
The increasing number of small and medium sized operations is also presenting a supply challenge – SMEs need affordable training solutions for smaller numbers of trainees. The system needs to accommodate this – it is not sustainable to shift training costs onto SMEs that are already struggling. High-end, custom-made products, such as those made in advanced jewellery making, fashion design and furniture production, rely on a very small number of high-level, high-quality skills.

Picture framers need effective recognition of prior learning (RPL) programs to help address shortages, boat builders need access to training providers, high quality watch repairers need on-the-job training. Manufacturing's many micro operations and sole traders also need access to affordable training options to help grow their business and technical skills.

Manufacturing's many micro operations and sole traders need access to affordable training options to help grow their business and technical skills.

Changes to course fees are another of the significant impacts of reforms. Sixty-one per cent of RTOs responding to MSA's EScan survey said they had increased fees over the past 12 months, many by more than 50%. This was more significant in public RTOs with 82% raising fees, compared to 33% for private RTOs. Training providers, and the VET system will need to deliver high-quality products and services to reassure employers and trainees that they are worth the investment and that training makes good economic sense.

Fee increases in 2013



Confusion and contradictions

Stakeholders raised a number of confusions about the intentions of current reforms, in this year's EScan research. These confusions are captured in the following observations:

- Manufacturing needs skills to grow niche markets, but funding models make thin markets unviable and training in niche areas is diminishing.
- Manufacturers need high-level skills, but cuts to funding in Certificate IV, Diploma and Advanced Diploma qualifications has placed upskilling out of reach for many enterprises and individuals. Lack of access to VET Fee Help for Certificate IV level qualifications have left these as full fee paying – RTOs say this level is now in limbo with a barrier to critical upskilling in trade and technical areas.
- Australia needs to address shortages in key skill areas, but removal of Certificate II level funding has reduced pathways into these areas.
- Apprenticeship numbers need to be increased, yet funding changes have seen scores of apprentices left high and dry over the past 12 months.
- Australia needs to close the gap in the workforce participation of less advantaged groups, but funding cuts to TAFE will remove social services that help these groups participate in the workforce.
- The VET system is established and regulated at a national level with Council of Australian Governments (COAG) directives, yet implementation is controlled at a state and territory level, often with significant differences. RTOs and enterprises operating at national levels continue to be confused by state and territory variations and having to deal with multiple layers of bureaucracy.

Stakeholders say mixed messages have left them wondering what exactly the VET system is trying to achieve.

- VET is now an industry-led system that is driven by trainee entitlements.
- Manufacturing enterprises must be lean and efficient to compete internationally, yet funding for Competitive Systems and Practices has been removed in some states and territories.
- Funding cuts will reduce trade training and enterprises will look to 457 visas to fill skill gaps and use Australians for unskilled work – how will this develop a sustainable workforce for Australia?

Stakeholders say these mixed messages have left them wondering what exactly the VET system is trying to achieve. While in some cases these comments illustrate that there is still room to improve alignment of VET objectives and practices, they also identify a need to increase understanding of how to make the system work to meet the specific needs of stakeholders.

Enrolments are the gauge

Overall apprentice and trainee commencements increased by 2,122 places across MSA Training Packages from 2011 to 2012, strengthened particularly by take-up in qualifications in Competitive Systems and Practices (up by 1,430) and laboratory operations (509). But key trade shortage areas, such as those in metal and engineering, are in decline, and even more worrying, there are strong indications that 2013 figures will see a significant downturn.

According to the National Centre for Vocational Education Research (NCVER) data released in September, apprentice and trainee commencements in the first three months of 2013 were 33% lower than in the previous year.[34] This decline appears to be in response to Commonwealth cuts and is evidenced throughout Australia, except Western Australia which saw an increase of around 10%. Forty-five per cent of RTOs responding to MSA's EScan survey also confirmed a reduction in enrolments in MSA qualifications from 2012. Public RTOs reported that 2013 enrolments were down, while private RTOs say figures were more evenly balanced between increases, decreases and similar levels to 2012. Funding cuts are given as the main culprit for reduced enrolments, with some also affected by industry downturn. Those experiencing increases attributed this to better marketing and customer service.

At the same time, employment outcomes for VET students appear to be declining. According to NCVER research, the link between training and occupation is weakening, with declining numbers of graduates finding work and an escalation of students selecting modules without any intention of finishing the course.[35]

On a more positive note, 47% of RTOs in MSA's EScan survey say they had seen an increase in enrolments from mature aged workers and 35% in skill shortage areas, over the past 12 months.

Anecdotally, RTOs say that they are expecting much lower uptake as funding allocations and employer incentives are reduced, and most employers interviewed for this year's EScan confirm that they have significantly reduced their apprentice intake in 2013 and will again next year.

34. NCVER. Australian vocational education and training statistics: student outcomes 2013. December 2013. 35. ibid.

They say that funding cuts, on top of difficult economic conditions, have made apprentice intake unviable. Cuts in subsidies for non-trade traineeships are expected to have an even greater impact on enrolments.

RTOs report that sudden policy changes have been implemented without notice, leaving apprentices stranded or sent back to training providers. Existing workers and mature aged apprentices were also told mid-term that they would have to find new providers to finish courses. In some cases, both trainees and employers have lost some confidence in the stability of the VET system for long-term planning and are becoming more wary about investing in training programs. Employers are also concerned that the apprenticeship wage rises due in 2014 will create one more disincentive for an already costly investment.

Manufacturing's many SMEs are particularly concerned that they will be unable to afford to take on apprentices, and this will create succession issues in the near future.

Some believe that, given the increasing onus on employers to train and manage the tradespeople of the future, they should be receiving greater levels of support.

TAFE under fire

New financial imperatives on TAFE are also expected to impact enrolments. Without doubt it is the public RTOs that are facing the most significant challenges under VET reforms, with the private RTOs more adept in managing change and pursuing market opportunity. The gain for private RTOs is clearly evident in Victoria, where the market share of private RTOs (43%) has grown by 56% from 2011 to 2012.[36]

TAFEs are under fire across MSA sectors and this is causing great concern at many levels. Reforms are putting doubts on the viability of courses and the security of employment. Casualisation of the workforce is reducing commitment to skilled workers and morale is low.

While TAFEs must adapt to new market demands and fiscal constraints, like all stakeholders in today's shifting economy, it is important not to forget the significant contribution that TAFE institutes make to social and vocational outcomes.

According to NCVER, in 2011, there were 1.2 million people (66%) undertaking training through the TAFE system in Australia. Of these, 187,264 were undertaking contracts of training through the Australian Apprenticeship system. Of the 1.1 million employed students studying through the VET system, 72% were studying at TAFE.[37] TAFE is a central provider of MSA qualifications, many of which are costly to run and require substantial investment in facility infrastructure. It is of significant concern to MSA that in the current funding climate, training in these expensive, though critical skill areas, will be abandoned in favour of more profitable course delivery.

In 2011 TAFE accounted for 67% of all students enrolled in publicly funded courses from regional areas; 72% of these from remote and very remote regions; 65% of the most disadvantaged students, 65% of Indigenous students, 70% of those with a disability and 71% from non-English

36. DEECD Manufacturing Report 2013. Page 70. Note: DEECD figures include meat and food processing, not included within MSA's coverage. 37. VOCSTATS, Students 2002-2011 (Revised 31/08/12) accessed April 2013.

TAFEs are under fire across MSA sectors and this is causing great concern at many levels.

speaking backgrounds (NESB).[38] TAFE also provided mixed field programs that include literacy and numeracy, learning skills, career development, job search skills and work practices programs, for 2.6 million students (67%).

If Australia is serious about engaging its more marginalised groups to achieve a workforce participation rate of 69%, as recommended by the Australian Workforce Productivity Agency (AWPA), these figures are important considerations when planning what comes next in public support of TAFE.

In addition, TAFE provides a central anchor in developing pathways into higher education and is a major exporter of education and training services with more than 240 active partnerships in 40 countries and 58,000 students studying off-shore.

TAFE directors are calling for a commitment to properly resource its institutes to ensure that these essential social and vocational benefits are not lost in the move to create an open training market.

38. Source: VOCSTATS, Students 2002-2011 (Revised 31/08/12) accessed April 2013.

Identified workforce development needs

Moving the agenda forward

Similar to manufacturing generally, there are huge opportunities for training providers that strive to deliver well-targeted products and services.

Manufacturing enterprises place a high value on onsite, flexible delivery of training that is well supervised and carefully tailored to their skill requirements. Onsite delivery increasingly makes sense in a climate where appropriate trainer skills are becoming less available, and facilities may be harder to access. The ability of private RTOs to respond to industry demands is seeing these RTOs rapidly increase their market share. The public system needs support to be able to offer the same flexible and innovative options to industry.

Action on quality

Ultimately, the strength of the VET system depends on its ability to consistently deliver the occupational skills needed by industry, as identified in national Training Packages. Its ability to achieve this has been in question for a number of years, with the variability of outcomes being one of the biggest challenges for VET. All stakeholders are demanding action on quality.

RTOs and enterprises alike believe that variable or unsatisfactory training outcomes are undermining the success of VET. In MSA's EScan survey, 32% of enterprises claimed to have experienced poor return on training investment; this experience is deterring them from undertaking further training. Sixty-nine per cent of enterprises rated nationally accredited training outcomes as satisfactory or less, with only 9% as work ready and 23% as excellent. While these outcomes are an improvement on 2012, they are still a long way short of meeting consumer need and expectation.

The Industry Skills Councils (ISCs) believe that Standards for Training Packages and Standards for RTOs provide the vehicle for driving further improvements in national consistency. Work is underway to identify assessment requirements for competency standards that will help to achieve more consistent interpretation of skill outcomes. The National Skills Standards Council (NSSC) Review of the Standards for the Regulation of VET 2012, is also currently exploring what reforms will achieve quality improvements.

The ISCs are committed to working with the NSSC and commissioned a project that provided extensive input into defining requirements and measures to accompany regulatory standards.
This project was supported by the NSSC and the Department of Industry

In addition to greater measures in training and assessment standards, MSA believes that quality improvements can be made by targeting critical inputs from enterprises, RTOs and the VET system.

- **Enterprise engagement** – Quality outcomes need support and input from management, not only to determine training needs, but also to support effective program delivery. While enterprises may express dissatisfaction with training outcomes, they often do not understand their skill needs or how to navigate training options. Supporting enterprises to become more informed users of the VET system would help to improve VET outcomes and is a key priority in MSA activity. Initiatives like MSA's MWDS provide evidence that a better definition of training needs at the start of activity, can make all the difference to the end result.

- **Customised training programs** – Manufacturing enterprises need flexible, customised training solutions. RTO flexibility to develop and deliver training programs that meet industry needs is essential, and to do this, they require a flexible VET system. VET must be vigilant that the open training market does not promote competition based on price rather than quality.

- **Professionalism of VET practitioners** – Lifting outcomes requires skilled trainers that achieve high standards. There is increasing focus on standards for RTOs and on providing more assessment advice in training standards, MSA welcomes these initiatives to lift VET quality. It is also critical that trainers have the skill and knowledge required to add value to training. They need professional development opportunities and support and recognition for the essential role they play in upskilling Australia's workforce.

Better regulation – not more regulation

RTOs are saying that paperwork associated with current compliance and auditing regimes have become nonsensical. The director of one private RTO illustrated this with a recount of his latest auditing experience. The RTO is a well-respected provider of engineering qualifications ranging from VET in Schools (VETiS) to Advanced Diploma outcomes; around 40% of its income is from fee for service delivery, confirming its high value to industry. The RTO visits its apprentices every week for on-the-job training, supervision and assessment; it prides itself on this high level of face-to-face, onsite contact.
In order to meet auditing requirements to renew its registration, the RTO was required to document details of these visits, a demand which created a massive amount of paperwork and took significant personnel time away from service delivery.
The RTO was frustrated that the benchmark for meeting registration requirements was only four visits per year – prompting the director to ask why he was required to compile such a huge amount of evidence to meet such a low standard? He concluded that the system actually penalised those that strive for higher standards.

RTOs continue to complain that auditors do not understand the environment they are working in, and that the onerous amount of paperwork is demoralising and detracting from training effort. Some also say compliance demands are starting to influence their selection of what programs to deliver.

One of the main concerns expressed to MSA by its stakeholders has been the inconsistency and narrowness of the audit process. Many RTOs have indicated to MSA that interpretation of the existing standards vary between auditors both within the same regulatory body and across regulatory bodies. MSA supports the NSSC proposal for the development of a set of national competencies for auditors and course accreditation for advisors, and a system that requires mandatory training in these competencies. Additionally, MSA would support a process to ensure consistency in auditor judgements.

Most RTOs welcome attempts to cull poor performing RTOs and lift the quality of outcomes. However, they are finding the current regimes excessively costly and too focused on compliance rather than training implementation, the quality of graduates and industry satisfaction.

Workforce priorities for a modern manufacturing workforce

Customised training solutions for a customised industry

Australian manufacturing needs to target global markets that it can successfully compete in, and deliver high-quality, niche products and services that are carefully customised to meet specific market needs. Manufacturers need to be highly responsive to their customer needs, work collaboratively to ensure they design and deliver a high value solution, and be agile enough to adapt to changing circumstances.

Manufacturing is becoming less about quantity and more about quality; it needs a VET system that operates in the same way.

To effectively service manufacturing, VET needs to:

- work collaboratively with enterprises and industry sectors to design and deliver cost-effective solutions
- clearly identify and target the enterprise specific skill needs
- deliver skilled workers efficiently to the workplace, without compromising quality
- accommodate skill development in thin markets.

Delivery of customised training will require both public and private RTOs to be flexible about their delivery models. It is a concern that new funding models may be a barrier to innovative training delivery.

MSA's EScan survey found that 76% of public RTOs use face-to-face delivery as their top delivery tool (more than 60% of the time) compared to 42% of private RTOs. Private RTOs were more likely to use on-the-job training (58% use this more than 60% of the time), than public RTOs, which mostly deliver on the job for less than 10% of the time; 24% of public RTOs said they never deliver on the job. However, 90% of public RTOs use e-learning resources to some degree while 44% of private RTOs say they never use e-learning resources.

All RTOs will need to ensure that they have the right delivery mix to meet the specific needs of their industry customer base. RTOs delivering in thin market areas may also need to increase their repertoire to maximise cost efficiencies.

Higher-level skills

Manufacturers need access to higher-level skills. In MSA's 2013 EScan survey, 65% of engineering companies said they require higher-level technical skills within the workforce to remain competitive. This year (2014 survey), 82% of enterprises said they need higher-level technical skills. This is a key industry priority, and puts extra pressure on targeted upskilling programs for existing workers. Often these workers are too valuable to attend off site programs and training may require access to expensive equipment. There is concern that VET reforms have put a question over delivery in some higher-level skill areas.

Outsource Institute of Technology in Queensland has designed a training model that is overcoming some of these barriers. It has developed a mobile training facility that can support on-the-job delivery for its regionally located clients. Through a combination of online and onsite tutorials, practical workplace activities and resources, and close assessment supervision, the RTO has effectively provided upskilling and advanced trade programs to more than 300 workers. The RTO stresses that employers are very keen for this type of flexible delivery, especially when training in high-level skills, such as specialist welding, mechatronics, instrumentation and robotics, that need to be developed on the job.

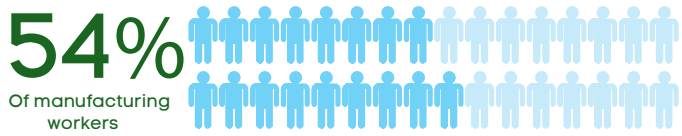
RTOs also talk of industry demand for an incremental approach to skills development and believe there is demand for Skill Sets in some of the higher skill areas.

RTOs delivering in thin market areas may also need to increase their repertoire to maximise cost efficiencies.

Broad-based, transferrable trade skills

It's clear that the skill needs of manufacturing enterprises are changing – 91% of enterprises in MSA's EScan survey agree. Higher-level technical skills are required in 82% of enterprises, 59% need innovation skills and 55% need their workers to be multi-skilled. If Australian manufacturers are to transition into the new era, they need access to both broad-based skills and highly specialised skills.

Today's trade workers need to have a solid understanding about the principles of their work if they are to be good problem solvers and innovators. There is extensive work to do here across the manufacturing workforce. According to the Programme for International Assessment of Adult Competencies (PIAAC), 54% of manufacturing workers had 'problem solving in technology-rich environment' skills below level 2-3 (in a range from 1 [lowest] to 5).[39]



Effective apprenticeship programs

An expansion of the highly successful Kickstart program was well received in 2013 with nine additional engineering trades made eligible for incentive funding. Increased first year incentive payments for apprenticeships may also help to lift apprenticeships in key trade areas, while also attracting a better caliber of applicant – an issue that employers have been raising for many years.

Apprenticeship reform is on the agenda and MSA has been happy to contribute to dialogue in this area this year.

Ultimately employers need to be encouraged to take on apprentices, however, this appears to be increasingly difficult. They are concerned by the financial investment and also about the possibility of losing apprentices once they are trained.

The reluctance expressed by manufacturing enterprises to take on apprentices, for fear that they will leave for resources projects, has cooled in this year's research. It is possible that they are noticing young tradespeople return. Resources enterprises are finding that the average worker age is around 33 years, and that their work stint lasts only around 2–3 years, even less for fly in fly out (FIFO) workers, before they return to where they came from. Manufacturers must use this time effectively. The workplace opening is an opportunity to bring someone new into the industry, and the older workers that are less likely to pursue resources opportunities, can be engaged to help upskill these new workers. It is clear that manufacturers need to embrace the inevitability of today's mobile workforce more to their advantage.

According to Ai Group research, employers have many grievances about the basic skill levels of apprentices. Areas of dissatisfaction include self management, planning and organising, problem solving, and initiative and enterprise.[40]

39. http://www.abs.gov.au/ausstats/abs@.nsf/mf/4228.0. 40. THE AUSTRALIAN INDUSTRY GROUP Apprenticeships: Achieving Excellence JUNE 2013. Page 10 http://www.aigroup.com.au/portal/binary/com.epicentric.contentmanagement.servlet.ContentDeliveryServlet/LIVE_CONTENT/Publications/Reports/2013/apps%2520report%2520FINAL.pdf

In a bid to improve apprenticeship outcomes, Ai Group has made a number of recommendations. These include clearly establishing the employer as the primary customer of RTOs for apprenticeship training; increased recruitment support, including making the Kickstart employer incentive permanent; competency-based progression; reviewing pre-apprenticeship pathways; and promoting excellence through programs, such as WorldSkills.

Administrative overwhelm is another issue that needs addressing. Both employers and RTOs find the current paperwork requirements arduous and confusing, with state and territory variances adding further complication. More efficient administrative systems would be well received, however, MSA believes that a fully online system would not be the solution for many of its SME stakeholders – many are not technologically geared for using internet and cloud-based software, or have the necessary digital literacy skills.

The effectiveness of apprenticeships is a high priority for MSA, whose stakeholders manage nearly a quarter of all traditional and other trade and technical apprenticeship contracts of training. MSA believes that improvements should be focused on good levels of face-to-face support for both the apprentice and employer, careful tailoring of training plans and national consistency. Employers need to be supported to properly determine what their skill needs are, and better informed in what the options are to meet their needs. They also need support in developing effective relationships with their apprentice. The on-going relationship between the apprentice and employer has been shown to be one of the most important determinants for the successful completion of an Australian Apprenticeship.[41]

Competency-based progression in apprenticeships is another area that has come under focus in recent years with pressures to fast-track access to trade skills. RTOs have also been putting employers under pressure to sign-off apprentices so they can get paid. The push for competency sign-off has resulted in some apprentice skills being prematurely signed off. The Ai Group's Engineering Excellence three-year pilot project aims to give employers confidence about competency-based progressions by developing systems and tools that guide competency sign-off in the workplace. The project will track 3,500 engineering apprentices in fitting, machining and metal fabrication specialisations.

The achievement of a solid base of quality trade skills is essential for manufacturing. Without these, specialist skills cannot be developed, innovative problem solving is limited and tradespeople are thwarted in their ability to transfer their skills to ever changing applications. Apprenticeship programs must be designed to ensure that solid, broad-based skills are achieved that meet current job outcomes.

In fact many stakeholders believe that there is a need for Certificate IV level skills to successfully navigate highly commercial work environments that require skills in quoting and contract negotiation and project and business management. Specialist skills and working with changing technologies and across disciplines also increasingly feature in modern trade and production work. Some RTOs are gearing apprenticeship training programs with extension into these skill areas.

There is a lot at stake in getting apprenticeships right, without compromising the quality of skills.

Group Training Northern Territory (GTNT) has developed an innovative approach to apprenticeships that it is running in partnership with Charles Darwin University. Together they are targeting welding trade skills that are in high demand from resources companies. During the first year apprentices will also

41. Australian Government, 2011, A shared responsibility Apprenticeships for the 21st Century http://www.australianapprenticeships.gov.au/sites/default/files/publication - documents/Apprenticeshipsforthe21stCenturyExpertPanel_0.pdf accessed July 2013

Better management of apprentices may help to reduce cancellations and withdrawals, which would also help to increase completions.

complete requirements for the NT White Card, and a license for working in confined spaces, heights or elevated work. GTNT believes these additional attributes will make them more appealing to employers. GTNT will also ensure that apprentices are exposed to a wide range of industry contexts that provide exposure to the opportunities in trade occupations and provide essential mentoring in basic living skills. GTNT believe that young people need this level of support to navigate early career development.

Mentoring components within new apprenticeship schemes are being received positively, however, stakeholders note that often mentoring is introduced too late. Effective mentoring needs to be embedded early into apprentice relationships.

MSA is also conscious of the need to provide information and marketing to the parents of potential apprentices and school career advisers, who have a strong influence on apprenticeship decisions. An effective match of a young person to a trade or profession is essential to improving outcomes.

Apprentice enrolments and completions need to increase to address skill needs for tradespeople and technicians. Better management of apprentices may help to reduce cancellations and withdrawals, which would also help to increase completions.

Apprentice and trainee commencement figures

Reporting period	2008	2009	2010	2011	2012	5 year change
Type of accreditation						
LMF - Furnishing	3,066	2,239	2,991	2,499	2,260	-806
LMT - Textiles, Clothing and Footwear	802	745	748	414	619	-183
MEA - Aeroskills	841	779	549	549	504	-337
MEM - Metal and Engineering	12,354	8,169	9,865	10,159	9,795	-2,559
MSA - Manufacturing (includes CSP and PM)	4,537	9,259	11,129	14,277	15,707	11,170
MSL - Laboratory Operations	725	888	867	1,204	1,713	988
MSS - Sustainability	N/A	N/A	N/A	2	423	423
PMA - Chemical, Hydrocarbons and Refining	425	750	781	646	826	401
PMB - Plastics, Rubber and Cablemaking (drop related to placement of PM qualifications in MSA07)	2,564	459	578	294	392	-2,172
PMC - Manufactured Mineral Products	278	173	228	168	164	-114
THC - Recreational Vehicles	91	125	104	84	15	-76
Total	**25,683**	**23,586**	**27,840**	**30,296**	**32,418**	**6,735**

VET in schools

'Strong on retention, weak on outcomes' is how one report describes the impact of VETiS programs and MSA stakeholders would mostly agree. The report lists a range of failings of VET programs that are now offered in 90% of Australian schools, including an overrepresentation of students from the lowest achievement bands and qualifications that hold little employment value in the workforce.[42]

> Manufacturers are clear that they need entrants that are high achievers, with good STEM skills in order to meet the demands of modern enterprises.

With state and territory government commitment to VETiS increasing around the country, delivery of these programs will need to improve. Certainly outcomes are lifted when industry is involved to give the program legitimacy and workplace exposure. Ensuring suitable entry-level and pre-apprenticeship courses is critical to match the capacity of school-based delivery. With Certificate II level funding capped in most states and territories, RTOs will be competing with schools for places.

Victoria is currently building twelve school trade-training centres for the delivery of the state-based Certificate II in Engineering Studies. The project is a partnership initiative between the Victorian schools and private RTO, Educational Living.

Students will use industry level machines and equipment and gain an introduction into electrical, mechanical and technical trade areas. At the end of their training, students will have had the opportunity to complete a pre-apprenticeship program that has credits towards metal and engineering units of competency as well as achieve 10% towards their ATAR score. Students will have the opportunity to continue with their engineering training and, over a period of 12 months, acquire a competency/Skill Set that is equivalent to a first year apprenticeship.

First enrolments are expected in 2014 and the concept is planned for expansion into NSW. The facilities will also be made available for industry training programs. Educational Living, which is supervising the project and providing training delivery, believes that the program will achieve a much better industry focus and outcome than other VETiS programs.
The RTO's extensive experience in delivering on-the-job engineering courses at all levels, will no doubt bring the essential vocational perspective and expectation to this context.

MSA's Certificate II in Engineering (Pathways) is now completed and will be available for delivery in 2014. It will support development in project-based skills via institutional delivery and provide some credit towards work-based trade and production qualifications.

It is important that pre-vocational programs like these clearly target 'trade-like' skills, not trade-level skills, and provide valuable insights into trade career options.

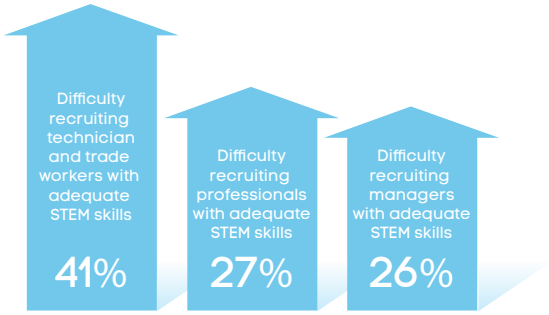
STEM skills

Development of STEM skills continues to be a central priority to ensure manufacturing can grow its national skills base. STEM skills are the building blocks required for trade apprenticeships and are key to pursuing the high quality, high skill outcomes manufacturing needs. Improving STEM outcomes is a shared issue across developed countries. However, Australia lacks the level of urgency found in other countries according to recent research and in the number of students enrolled in STEM courses.[43] An Ai Group survey determined that significant numbers of enterprises are being frustrated in their efforts to secure employees with STEM skills. The survey found that 41%

42. Kira Clarke and John Polesel. Strong on retention, weak on outcomes: the impact of vocational education and training in schools. 43. ACOLA: International comparisons of science, technology, engineering and mathematics (STEM) education. Final Report 2013.

Some of the most effective training outcomes are those that have been developed and implemented by a collaborative approach to workforce development.

of survey respondents had experienced difficulty recruiting technician and trade workers with adequate STEM skills, 27% for professionals and 26% for managers, across many industry areas.[44]



This difficulty in accessing STEM skills is widely believed to be limiting enterprise innovation and holding back our economic growth. This is prompting bodies, such as the Ai Group, Office of The Chief Scientist, the Australian Council of Learned Academies and others, to stress the links between strong, dynamic economies and strongly performing STEM education and/or research science systems. They are also calling for a more national and concerted approach to the development of STEM skills. Strategic suggestions include increasing support for and capacity/professionalism of teachers, adopting more enquiry-based teaching practices and incentives for innovation. Industry also needs to get more involved in promoting and supporting development of STEM skills. The Office of the Chief Scientist has just commenced a research project to increase understanding about how STEM skills are used in businesses.

Industry/VET partnerships

It takes a team to develop a skilled worker and an industry to continue to develop that worker into a valued member of an innovative and productive economy. Some of the most effective training outcomes are those that have been developed and implemented by a collaborative approach to workforce development.

In recent years MSA has seen an increase in collaborative partnerships, often in response to changes in VET options. Industry associations are becoming more active in addressing the training needs of their members, TAFEs and university partnerships are helping to strengthen market offerings, and RTO and industry partnerships are ensuring training is relevant and well tailored. Regional collaborations are also helping to improve local workforce development options.

MSA believes that these collaborative models are an important way forward in developing a modern manufacturing workforce.

In the Gippsland region of Victoria, a strategic partnership of enterprises and training and education providers has developed an integrated, sustainable model for developing critical, advanced manufacturing skills. The Regional Industry Skills Alliance (RISA) has established a pathway from Certificate III to Masters level for the development of skilled tradespeople, paraprofessionals and professionals in control and systems engineering, focusing upon designing, implementing and maintaining automated value-adding manufacturing systems.

The program uses a multidisciplinary, project-based approach to build problem solving and innovation skills, and takes students from basic principles right through to investigation of potential investors and commercialisation of the project team's ideas. Projects are real industry proposals and will have direct industry engagement, with the aim of being integrated into practice. Technology enabled learning and facilitated online delivery will give access to a diverse cohort of students and the program is supported across regional Victoria through a syndicated delivery network of VET providers.

This model offers solutions to many of VET's challenges. It can be applied in regional Australia and elsewhere, targets real industry priorities, combines the strengths of industry and educators and develops workers who can improve productivity and competitiveness within a modern workforce context.

Effective partnerships and collaborative arrangements are also important in securing productive outcomes from on-the-job training. This collaboration needs to be improved to lift training effectiveness.

MSA has recommended the introduction of a tripartite 'service delivery agreement' that would set out the obligations and rights of all parties involved in a training program, that is, the learner, the 'sponsor' and the training organisation, including

44. The Australian Industry Group. Lifting our Science, Technology, Engineering and Maths (STEM) Skills. 2012.

the obligation to provide access to support services, such as learning support services and financial support services.

Establishing productive partnerships will be critical in this next phase of VET and RTOs will need to embrace this in their delivery strategy. Public RTOs are currently at a disadvantage in this area – in MSA's EScan survey, 42% said they never use partnerships in their delivery strategy, while 80% of private RTOs use them to some degree.

Partnerships between RTOs may also be required if providers are to truly offer a flexible approach to training delivery that can accommodate the needs of a wide variety of industry applications. Partnerships could also improve access to facilities and to the latest equipment and technology. As manufacturing enterprises diversify their product and service offering, the skills mix may broaden.

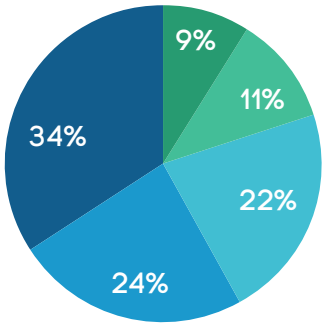
Increased professionalism of VET

One of the growing concerns amongst both RTOs and enterprises is a shrinking access to trainers with specific skill and knowledge required across manufacturing and engineering operations. Forty-five per cent of RTOs said that they suffer from skills shortages and enterprises increasingly report that training providers are not able to add any value to training programs by way of technical expertise, especially in niche skill areas. This has been exacerbated by the closure of courses around the country and the loss of critical mass in developing industry skill and knowledge.

Public and private RTOs are looking to obtain the skills they need by recruitment or short-term contracts (76% of public RTOs say they will use this compared to 47% for private RTOS), and training (at around 25% for both) and industry partnerships (27% public; 31% private). But they are struggling to find suitable candidates (33%) with many believing that salary competition from other employers, and falling employment conditions, such as casualisation and increasing workloads, are working against them. Some TAFE teachers claim that there are now no permanent full time jobs within their specialist areas. Even those with jobs are concerned about their future security. They say morale is low and they are under intense pressure to compete with private RTOs in the new climate of 'entitlement'.

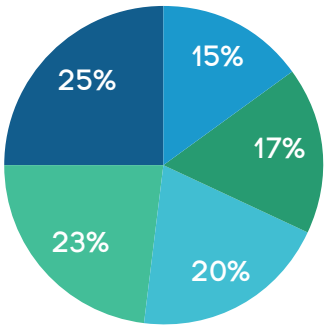
The casualisation of the VET teaching workforce is an issue not only for attracting required skills, but also for ensuring a strategic approach to upskilling and professional development

Public



9% Work placements
11% LLN
22% Formal - Technical
24% E Learning
34% Formal - T&A

Private



17% Work placements
23% LLN
20% Formal - T&A
15% E Learning
25% Formal - Technical

The casualisation of the VET teaching workforce is an issue not only for attracting required skills, but also for ensuring a strategic approach to upskilling and professional development across the workforce.

across the workforce. At this stage RTOs say they are engaging both formal and informal professional development, mostly paid for by the organisation (65%).

Professional development has certainly been a priority over the past 12 months with almost all RTO survey respondents (96%) having engaged in some kind of upskilling activity. While most of this was concentrated on informal skills development across training and assessment, technical skill development and VET information sessions, MSA's survey also identified other professional development priorities.

Building capacity in LLN, foundation and core skills

The increasing focus on LLN, and the introduction of the LLN unit to the core skill requirements for the TAE40110 Certificate IV in Training and Assessment in 2014, has prompted a number of upskilling initiatives and RTOs are clearly preparing for a more strategic focus on LLN skills. While most survey respondents say they are confident that they have effective LLN support in place (65%), with 81% claiming to have dedicated LLN specialists, many also say that results are variable (53%) and around three quarters say that additional resources (time/funds/expertise) are required. Some public RTOs noted that funding is being withdrawn from this area in their institutions, along with funding for foundation and base-level courses, and that this seems to be at odds with goals to lift levels. Other common concerns expressed were that trainers would be carrying an extensive additional load requiring specialist skills, and would be competing with time and resource allocation for technical skills development within a budget constrained environment. They insist that additional funding and professional development are critical. While some of these concerns are misplaced, much of the work in LLN requires specially trained practitioners, the need for additional support in this area is evident.

The survey also showed that private RTOs have less confidence than the public providers, with only around half having specialist expertise. They have been twice as active as public RTOs in seeking professional development in this area.

In order to build RTO capacity in LLN and foundation skills, MSA seeking funding for an upskilling program that will see approximately 100 VET practitioners undertake a TAE70111 Vocational Graduate Certificate in Adult Language, Literacy and Numeracy Practice. MSA has not been surprised to note that it is mostly private RTOs that have applied to participate in this program to increase their capacity.

The 'National Foundation Skills Workforce Development Project', is funded for $1.4m from the COAG Standing Council on Tertiary Education, Skills and Employment (SCOTESE). It will identify and develop champions, create a practitioner network, define required professional skills, and deliver professional development workshops.

It is estimated that the specialist LLN workforce across Australia is approximately 2,000 in size, with only 600 specialist WELL practitioners. Improving VET capacity will be critical to making an impact in manufacturing.

Over 45% of the manufacturing workforce has literacy skills below the minimum level required to cope with the demands of a modern workplace, and over 50% has inadequate numeracy skills. This needs to be lifted if Australian manufacturing enterprises are to compete effectively with higher-level skills and better quality outcomes.

Support initiatives in this area are being very well received. Over the past 12 months MSA's LLN resources – its 'Making the Connections' online professional development workshop, and 'Putting the Jigsaw Together' apprentice numeracy resources – have seen a total of 4,375 downloads. Clearly this is hitting the mark, and MSA is currently expanding its numeracy resources to meet demand.

The release of the Core Skills for Work Developmental Framework (CSfW) in 2013 will also provide a meaningful framework to guide continual development of employability skills during an individual's working life. The CSfW aims to identify skill levels in navigating the world of work, interacting with others and getting work done, and will put a greater focus on articulating key requirements within individual units of competency.

MSA's mapping of the Australian Core Skills Framework (ACSF) against high use qualifications is almost complete and results will be made available in early 2014. The project will identify ACSF levels required for the successful completion of units of competency and provide guidance for VET trainers and RTOs in developing tailored training plans that meet individual learners' specific needs.

MSA is also providing brokerage for WELL funding to help enterprises access the support they need to address workforce LLN issues. Already, MSA has seen a number of positive outcomes of WELL programs, including enabling development in technical work skills, addressing needs in disability services and supporting skills recognition for workers that are transferring to other sectors or jobs.

WELL funding reached new heights in 2013 with an oversubscription for the first time. However, applications are still dominated by five RTOs and there is a call for opening funding to a wider range of providers.

Continued focus on workforce development

ISC intelligence and leadership

The ISCs continue to be an important bridge between industry and the VET system. Over the past 12 months MSA has contributed extensive input into policy development on behalf of its stakeholders and helped thousands of enterprises navigate the system. MSA believes this role is more important than ever to ensure that the VET system stays relevant to the skill needs of industry.

MSA's involvement in workforce development has expanded to incorporate a broad range of initiatives.

Manufacturing's participation in the NWDF gained momentum from a slow 509 trainees in 2012 to 2,800 in 2013. MSA believes this is due to its increased promotional activities.

NWDF meeting industry need

Manufacturing's participation in the NWDF gained momentum from a slow 509 trainees in 2012 to 2,800 in 2013. MSA believes this is due to its increased promotional activities. Applicants were from all MSA sectors and all sized enterprises, with a particular focus on Competitive Systems and Practices, in line with manufacturing's pursuit of efficiency and productivity improvement. Victoria was particularly strong on applications, and this is understood to be due to qualifying rules in state funding that reduce opportunity for mature aged, previously qualified trainees. Competitive Systems and Practices is especially targeted for this kind of trainee.

State and territory government funding cuts for qualifications and reduced learner categories have increased the need for NWDF. Industry interest is high and growing and MSA is seeing increasing numbers of applications led by industry associations, and those which target specific workforce needs, such as women returning to work.

It is mostly private RTOs and enterprises that are experiencing growth or meeting supply chain requirements, that are tapping into the training opportunity. MSA is now running forums in regional areas to promote NWDF, especially with a strong SME focus.

Manufacturing Workforce Development Service

MSA's MWDS works directly with enterprises to help them identify their skill needs, design a relevant training program, access funding through NWDF and manage implementation. This service is helping manufacturers to get good value from the VET system. Over the past 12 months the MWDS has worked with 85 enterprises on their workforce development plans and has another 250 that have expressed interest. It has resulted in 166 enrolments in qualifications across Competitive Systems and Practices, engineering, and business and project management. Many enterprises have undertaken workforce development activity independently of government funding once their direction has been clarified.

This initiative is unique in terms of training service and is having some important outcomes. Firstly, it is raising awareness in the importance of workforce planning and giving enterprises the tools to manage it. It is enabling them to access VET resources effectively and become more discerning and demanding users. Finally, the personalised service that the MWDS is providing is helping to overcome past experiences that have been less successful for enterprises due to poor identification of skill needs, and have deterred enterprises from pursuing further development.

Enterprises say they are getting help they didn't know they needed and have gained productivity improvements that they wouldn't have sought without MWDS support.

Global connection to skills

In 2013 MSA participated in a launch of a new global network of industry sector skills bodies which aims to share experiences, knowledge and good practice, as well as promote the benefits of a sector-based approach to skills and workforce development.

Large components of Australia's manufacturing supply chains are now situated overseas in locations across the globe, and particularly in Asia. Most of today's manufacturing enterprises engage in international markets and global business-to-business arrangements. Many are also (and increasingly) managing production quality and skills application in supply companies that are located outside of Australia. The imperative for manufacturing to effectively manage business operations across international borders is one of survival for today's enterprises.

The high mobility of workers and global demand for skilled workers has also put greater pressure on how manufacturers manage the international movement and recognition of skills.

The MSA Board has adopted a detailed international strategy to further its connection to global skills, workforce development, education and training, research and planning, and international engagement.

globalskillsnetwork.net

Building workforce development capacity

MSA is working on a number of research projects designed to improve understanding of some key workforce issues. Topics include:

- women in manufacturing
- team and managerial skills in advanced manufacturing and engineering (with the University of South Australia)
- hidden skills of unskilled workers (with the University of Ballarat)
- secondary school work studies - years 9 and 10, and 11 and 12 (with ACARA)
- return on investment in training programs for SMEs
- mapping of regional demographics and industry priorities to inform targeting of workforce development activity.

MSA also provides important intelligence to further workforce development.

It has reviewed and rewritten 162 industry profiles for the government careers website MyFuture.com.au. Its work with enterprises and the development of Training Packages gives MSA a deep understanding of occupations and their skill needs. Further development of MSA's MySkills website will also incorporate a greater library of information on manufacturing career paths.

MSA is also working with Engineers Australia to identify workplace tasks that can inform competency-based progression and completion, allowing learners to progress at their own pace.

MSA's Industry Coordinators continue to run extensive workshops and information sessions around the country and build capacity with enterprises, RTOs, industry associations and regional stakeholders. MSA is committed to keeping an active focus on workforce development for manufacturing.

The high mobility of workers and global demand for skilled workers has also put greater pressure on how manufacturers manage the international movement and recognition of skills.

Call for ongoing commitment to VET

Delivering consistent, reliable and relevant skills to industry is a significant task, however succeeding in this is critical to the future health of the Australian economy. If AWPA's shortfall predications of 2.8 million qualified workers by 2015, or 2.8 million higher-skilled qualifications by 2025 are actualised, the Australian economy will be in deep trouble. Developing a highly skilled, productive workforce is essential and VET is the vehicle to help achieve this.

In the midst of federal, state and territory reforms that are seeing extensive consolidation and cost cutting, the question of value is gaining focus in the debate on VET outcomes. On analysis, the benefits of investing in VET far outweigh the costs. A study commissioned by TAFE Directors Australia (TDA) determined that additional funding into VET would see a return of 18%.[45] It acknowledges the important value to the economy not only of qualified graduates but also those who complete partial qualifications and those completing training at lower levels than previous qualifications.

TDA argues that this modeling demonstrates a compelling case for sustained and further increases in government funding for VET. It contends that there needs to be:

- a systemic review of tertiary education funding
- support for pathways funding
- greater emphasis on funding for skills sets
- more transparent and accountable arrangements for the NWDF.

An appropriate, ongoing commitment to improving the value of the VET system is essential. Australia has one of the most envied systems in the world, it's important that we do not lose sight of the benefits it brings and its potential for giving our enterprises the competitive advantage they need in today's global economy.

45. Independent Economics. Cost-benefit analysis and returns from additional investment in Vocational Education and Training (VET). Prepared for TAFE Directors Australia. August 2013.

Impact of Training Packages

MSA continues to work with industry to ensure that Training Packages are up to date and reflect the skills that manufacturing enterprises need to transition into efficient, innovative and world class operations. Recently this has also included the development of targeted Skill Sets to meet industry demand for upskilling people with existing qualifications and for licensing requirements.

The actual impact of reforms on enrolments is expected to be more clearly visible as figures are collated for 2013. More information on training take-up will also be available in the future as RTOs meet new requirements from January 2014 to collect and report all VET activity via the Australian Vocational Education and Training Management Information Statistical Standard (AVETMISS) system.

Key impacts across MSA Training Packages:

Enrolments across the majority of MSA Training Packages continue to grow and 2012 saw an additional 12,214 enrolments in manufacturing qualifications at publicly funded institutions across Australia. This is evidence that, while sectors within manufacturing are in decline, there is still a strong and increasing need for skills development and there are significant numbers of enterprises that are striving towards growth opportunities in the market.

MSA07 Manufacturing Training Package

The MSA07 Manufacturing Training Package features a range of qualifications with application across MSA sectors, such as Process Manufacturing and Manufacturing Technology, as well as specialised manufacturing qualifications in Recreational Vehicles and Surface Preparation and Coating.

Enrolments in MSA07 Manufacturing Training Package continue to show strong growth, especially in Process Manufacturing and Competitive Manufacturing, due to their relevancy and suitability across manufacturing. Up until 2012, MSA07 also housed the Competitive Manufacturing qualifications, which,

Total MSA enrolments

	2011	2012	Difference
LMF - Furnishing	12,697	13,574	877
LMT - Textiles, Clothing and Footwear	7,675	7,377	-298
MEA - Aeroskills	1,417	1,685	268
MEM - Metal and Engineering	58,575	61,600	3,025
MSA - Manufacturing (includes CSP, excludes rec vehicles)	18,501	25,878	7,377
MSL - Laboratory Operations	6,691	6,724	33
MSS – Sustainability (includes CSP from 2012)	3	481	478
PMA - Chemical, Hydrocarbons and Refining	4,956	5,564	608
PMB - Plastics, Rubber and Cablemaking	1,499	1,349	-150
PMC - Manufactured Mineral Products	104	156	52
MSA and THC - Recreational Vehicles	181	125	-56
Totals	**112,299**	**124,513**	**12,214**

following review were renamed Competitive Systems and Practices (CS&P) in line with their cross-industry application, and moved to the MSS11 Training Package.

The addition of the Diploma of Production Management into MSA07 in 2013 will help to extend development pathways across manufacturing and target sought after skills.

Enrolments in Recreational Vehicles (RV) service and repair qualifications however, are declining. This is due in part to the requirement for electrical and gas repair work on vehicles to be undertaken by licensed workers. As the RV maintenance qualifications don't provide electrical or gas licensing, this is a significant issue for small repairers in remote locations. While MSA is limited in its ability to address the licensing requirements, this issue will again be considered when the qualifications are revised to comply with the new Standards in 2014. It may be that a licensing Skill Set can be developed in conjunction with the relevant regulators.

Skills for Sustainability | Manufacturing Skills Australia

MSA07 enrolment figures

Commencements	2008	2009	2010	2011	2012	5 year change
Apprentices and trainees	4,537	9,259	11,129	14,254	15,707	11,170
All students	3,702	6,211	10,703	18,502	25,916	22,214
AQF 1	216	242	408	337	239	23
AQF 2	82	519	483	396	400	318
AQF 3	976	2,505	5,097	10,655	15,459	14,483
AQF 4	2,241	2,661	4,214	6,153	8,526	6,285
Diploma or higher	187	284	501	961	1,292	1,105

(The above statistics include the Competitive Manufacturing qualifications)

MSS11 Sustainability Training Package

The MSS11 Sustainability Training Package houses MSA qualifications that focus on sustainability through improved productivity and efficiency, as well as meeting environmental responsibilities. Qualifications cover Competitive Systems and Practices, Sustainable Operations and Environmental Monitoring, and Technology and Environmental Management.

Competitive Systems and Practices extends the earlier 'Competitive Manufacturing' to more easily apply across industries and sectors. It focuses on eliminating waste from business operations, including process, human and material waste. Sustainable Operations focuses on embedding economic, environmental and social sustainability improvements into business operations. Environmental Monitoring, and Technology and Environmental Management focus on measuring environmental impact and managing environmental risks.

MSS11 Sustainability Training Package was first endorsed in 2011 and is still gaining ground, but already it is being well received by industry stakeholders. There is extensive competition in the sustainability space from state and territory accredited courses at VET and higher education levels. Many of these were accredited prior to endorsement of the MSS11 Sustainability Training Package. As their accreditation expires, review of the alignment between accredited courses and the units of competency will need to be undertaken. VET trainers are still upskilling to deliver the MSS11 Sustainability Training Package qualifications.

Enrolments in the Competitive Systems and Practices qualifications are starting to show in 2012 figures, and this is expected to increase as new enrolments shift from the superseded Competitive Manufacturing qualifications (previously in MSA07 Training Package). Competitive Systems and Practices continues to be a primary strategy for enterprises to improve sustainability and MSA has revised units of competency and qualifications to allow cross-industry application of these highly regarded resources.

Competitive Systems and Practices extends the earlier 'Competitive Manufacturing' to more easily apply across industries and sectors.

While sustainability was recently given a lower level of focus for many enterprises as they awaited government directive, there are still growing numbers that realise sustainability drivers are here to stay and are taking action. Soaring energy costs have also been a strong motivator for enterprises to improve their skills in improving efficiencies and MSA has responded to this with the development of a range of energy efficiency resources.

MSA is committed to helping manufacturing enterprises transition to more sustainable operations and has developed a range of web-enabled tools, that are available from its dedicated sustainability website, to help enterprises and RTOs identify sustainability issues and design suitable training and assessment strategies. MSA resources include:

- sustainability guides for six MSA sectors that outline key sustainability issues and provide a model for identifying issues
- assessment tool kits for the ten core units in sustainability qualifications
- six energy efficiency Skills Sets – each includes advice on application, delivery and online assessment, and assessment samples
- a series of online energy efficiency videos that include examples of how Australian businesses have become more energy efficient and webinar sessions that explain key concepts and practices.

MSA has recently developed new units of competency in social sustainability that will help enterprises develop and implement triple bottom line business models.

Its priority in 2014 will be to increase marketing effort for its qualifications and resources to maximise industry capacity for, and capabilities in, sustainable manufacturing practice.

All students

Commencements	2012
Apprentices and trainees	423
All students	481
AQF 2	N/A
AQF 3	6
AQF 4	328
Diploma or higher	147

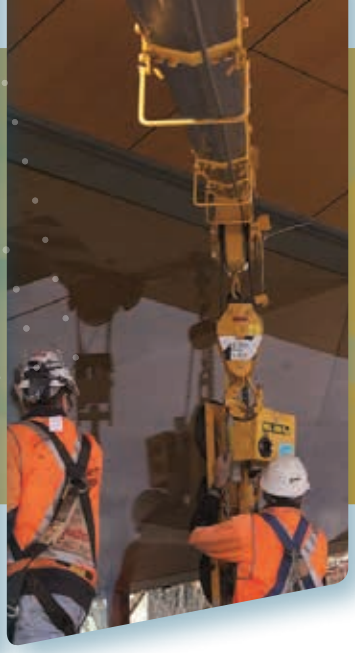
MEA11 Aeroskills Training Package

A decreased demand for training following drastic cuts in Qantas and other industry enrolments has reduced the viability of aeroskills training for RTOs and this has had an impact on capacity. There are now only around six RTOs in this sector remaining in Australia.

Skills development in aeroskills is a complicated process with national Civil Aviation Safety Authority (CASA) and Australian Defence Force (ADF) licensing requirements establishing benchmarks beyond the nationally accredited qualifications in the MEA11 Aeroskills Training Package.

MSA has developed a range of Skill Sets to help facilitate the updating of existing Licensed Aircraft Maintenance Engineers (LAMEs) following changes to CASA requirements, and has been supporting delivery over the past 12 months, with funding via the NWDF. MSA is now waiting for changes to regulations for small aircraft operators, to determine the VET response required.

MSA has also conducted an extensive mapping project to provide RTOs with advice on how work activities meet requirements in aerospace units of competency. This is designed to help RTOs and trainees complete work experience logs required by CASA in order to grant 'task authorisation'.



Other MSA initiatives in this sector include:

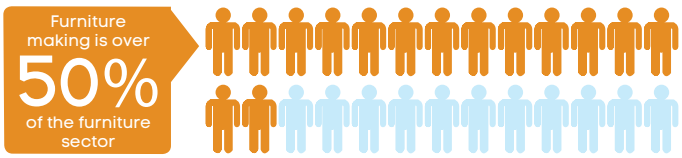
- Development and supply of the Aeroskills Maintenance Training and Licensing User Guide (covering major features of the MEA11 Aeroskills Training Package).
- Development of an Aeronautical Diploma and Advanced Diploma for inclusion in the MEA11 Aeroskills Training Package to provide a more efficient and appropriately targeted development pathway for the sector (expected March/April 2014).
- Ongoing promotion of training implementation in composites and advanced avionics technologies, aircraft welding, and non-destructive inspection and testing, to ensure workers have the right skills for new aircraft technologies.

MSF Furnishing Training Package

Review of the Furnishing Training Package was completed in 2013 and was endorsed in late 2013. The new MSF Furnishing Training Package features more flexible qualifications that offer specialist streams to facilitate delivery in thin markets.

New Skill Sets are to be considered to target the upskilling needs of some niche industry sectors.

Enrolments at AQF level 2 have doubled over the past five years, driven by take up in the Certificate II in Furniture Making, particularly in Victoria. Enrolments in this qualification reflect increased interest from VETiS programs that are geared towards ATAR results rather than industry outcomes, and also from use as an entry pathway into a range of related furniture trades. Furniture making represents more than 50% of the furnishing sector and is a strong employer of qualified tradespeople.



Apprenticeship and traineeship numbers have declined slightly - this is attributed to industry conditions, and competition from other sectors. The MSA supported NWDF project in cabinetmaking for rural and regional areas has been well received and all apprentices are progressing well.

MEA11 enrolment figures

Commencements	2008	2009	2010	2011	2012	5 year change
Apprentices and trainees	841	779	549	408	504	-337
All students	1,624	1,827	2,051	1,417	1,685	61
AQF 2	227	211	302	163	242	15
AQF 3	2	2	12	4	0	-2
AQF 4	1,391	1,541	1,667	1,166	1,208	-183
Diploma or higher	4	73	70	84	235	231

The kitchen and bathroom resources have now received 600,000 hits globally, and 42,000 downloads – illustrating the strong demand for delivery support.

Enrolments in glass and glazing qualifications doubled in some states and territories over the past 12 months and around $750,000 of NWDF funding was allocated to training programs for this sector. The industry association believes that the expansion from a single, rigid Certificate III three years ago to a flexible pathway from AQF level 3 to Diploma level, is helping to entice young people into the industry.

The blinds and awnings sector has also seen enrolments rise significantly with $500,000 of NWDF allocation. Interest is driven in part by licensing requirements in NSW.

The strongest growth in enrolments has been at AQF level 4, Diploma and above, driven mostly by interior design qualifications.

MSA developed a further 18 resources for its flooring qualification, making a total of 36 for the sector. The kitchen and bathroom resources have now received 600,000 hits globally, and 42,000 downloads – illustrating the strong demand for delivery support.

MSL09 Laboratory Operations Training Package

Enrolments in MSL09 Laboratory Operations Training Package are seeing moderate growth. Much of this is in response to growing demand for higher level skills in materials and laboratory testing, particularly to meet compliance, quality and sustainability requirements. Growth has been across all AQF levels, especially at the AQF level 4, which has doubled over the past five years.

There is some evidence of enrolment numbers declining in this sector, in line with the downturn in the resources sector and changes to VET funding. RTOs also say that industry interest is turning towards Skill Sets, with some questioning the value of delivery of full qualifications. The removal of existing worker traineeships is also expected to have a big impact on this sector. Fees in some cases have seen a significant rise from $1,200 to $5-7,000 and RTOs are dubious that employers or individuals will adjust to this hike.

There is evidence of increasing industry demand for online delivery of some MSL09 Laboratory Operations Training Package units of competency, and it is expected that economic drivers will encourage this mode of delivery. However, RTOs express concern about the limitations of this in building practical laboratory skills and say that it may result in lower quality workers.

LMF02 enrolment figures

Commencements	2008	2009	2010	2011	2012	5 year change
Apprentices and trainees	3,066	2,239	2,991	2,495	2,260	-806
All students	10,595	10,526	11,643	12,697	13,574	2,979
AQF 1	1,346	1,111	993	901	985	-361
AQF 2	1,418	1,592	1,623	2,700	2,926	1,508
AQF 3	7,790	7,299	7,342	6,909	6,900	-890
AQF 4	20	108	762	954	1,158	1,138
Diploma or higher	21	416	923	1,233	1,605	1,584

School leavers entering this occupation need to train to Diploma level to find work opportunity in industry. There are some calls for a VET level paraprofessional outcome for this industry.

MSA has now incorporated much needed forensic testing units into MSL09 Laboratory Operations Training Package qualifications.

MEM05 Metal and Engineering Training Package

Redevelopment of MEM05 Metal and Engineering Training Package commenced early in 2013 and is still ongoing. An updated Training Package is expected to be endorsed by mid 2014.

MEM05 Metal and Engineering Training Package is one of the most widely used Training Packages, and includes coverage for a range of critical trade and technician occupations.

Priorities for redevelopment include the review of the structure of all qualifications, and development of new units of competency and qualifications to meet industry need. Each of the 664 metal and engineering units of competency are to be revised to comply with the new Training Package Development Standards and will be updated to meet current industry needs.

The Certificate II in Engineering has seen steady growth over the past five years, with significant numbers within a VETiS context. However, school-based, fully institutionalised delivery of this qualification has caused significant controversy in industry, which claim that outcomes overestimate actual skill levels and reduces training value for both employers and individuals. MSA's new Certificate II in Engineering (Pathways) will be available for delivery in 2014. The new certificate offers a project-based approach and is suitable for institutional delivery. It will provide an important pathway to other metal and engineering work-based qualifications.

Declining apprenticeship enrolments continue to be a concern, with numbers down by 30% since 2008. While enrolments lifted post GFC, they have decreased again in 2012. Economic factors, reduction in employment numbers and reduced appeal of apprenticeships are primary factors in this decline.

MSL09 enrolment figures

Commencements	2008	2009	2010	2011	2012	5 year change
Apprentices and trainees	725	888	867	1,202	1,713	988
All students	4,678	5,008	6,109	6,691	6,724	2,046
AQF 2	213	171	252	407	263	50
AQF 3	1,490	1,309	1,541	1,446	1,706	216
AQF 4	1,235	1,492	1,958	2,321	2,424	1,189
Diploma or higher	1,740	2,036	2,358	2,517	2,331	591

Declining apprenticeship enrolments continue to be a concern, with numbers down by 30% since 2008.

Certificate II in Boating has also seen some growth, however, this sector is struggling to maintain this in the face of RTOs withdrawing courses.

Certificate IV in Engineering is showing strong growth in response to demand for advanced and specialised trade skills and higher skill levels demanded in engineering and maintenance.

MSA has been working with industry to promote the new Certificate III in Engineering - Composites Trade, and Certificate IV in Engineering Drafting, which were endorsed in 2012.

MSA is also currently developing and validating engineering job profiles for AQF level 5–6 qualifications for inclusion in the support material and implementation guides for its Training Packages. Initially, the information will include profiles for four key engineering specialisations - mechanical, maintenance, mechatronics and manufacturing. MSA will document typical job duties, tasks and work activities for engineering technicians along with the skills, knowledge, abilities and training required to perform this work effectively. MSA will also develop case studies of workers in engineering technician and engineering associate roles to better illustrate the scope of their responsibilities, functions and key tasks.

PMA08 Chemical, Hydrocarbons and Refining Training Package

While the effects of the GFC saw a slight decrease in 2009 training in this sector, enrolments increased in 2011 and continued to grow in 2012.

Overall, enrolment increases in PMA08 Chemical, Hydrocarbons and Refining Training Package reflect growth in the oil and gas sector while other sectors, such as oil refining and aluminium have seen a decrease in training due to industry downturn. Enrolments have increased significantly at the Certificate III level, which is the entry skill level expected in this sector. This expectation is now extending to include Certificate IV. Enrolment growth has been especially strong in Queensland with three to five times the number of enrolments in other states and territories, in response to growth in resources projects.

Steady growth in the higher qualification levels is predominantly a reflection of upskilling existing workers in higher skills demanded by industry. Removal of existing worker funding is expected to impact this sector as most trainees are existing workers. However, this sector has a history of investing in fee for service training.

MEM05 enrolment figures

Commencements	2008	2009	2010	2011	2012	5 year change
Apprentices and trainees	12,354	8,169	9,865	10,179	9,795	-2,559
All students	60,477	58,450	58,519	58,575	61,600	1,123
AQF 1	6,225	5,435	4,507	3,063	2,801	-3,424
AQF 2	10,892	11,262	13,695	14,407	16,866	5,974
AQF 3	33,779	32,537	30,839	30,430	31,267	-2,512
AQF 4	5,684	5,500	6,232	6,878	6,868	1,184
Diploma or higher	3,897	3,716	3,246	3,797	3,798	-99

MSA's Hydrocarbons Assessor Network (HAN) continues to meet a need for support in delivering quality outcomes for this sector. The network offers professional development for assessors and trainers, moderation of assessment practices and is a source of direct industry input to maintaining the currency of the PMA08 Chemical, Hydrocarbons and Refining Training Package units of competency and qualifications.

New units of competency in metalliferous minerals processing were endorsed in 2013 to target a niche skill area with no previous Training Package coverage.

Delivery is expected to begin in 2014. MSA has also developed new elective units of competency in plant preparation and isolation and flare operations in response to industry need for these skills.

PMA08 enrolment figures

Commencements	2008	2009	2010	2011	2012	5 year change
Apprentices and trainees	425	750	781	655	826	401
All students	2,397	1,959	2,998	4,956	5,564	3,167
AQF 1	6	0	0	0	0	-6
AQF 2	1,089	783	619	1,438	1,497	408
AQF 3	822	635	1,871	2,343	2,787	1,965
AQF 4	427	444	339	972	899	472
Diploma or higher	53	97	169	203	381	328

Many component suppliers will be impacted by the auto industry closures announced in 2013 and MSA expects to see this reflected in future training take up.

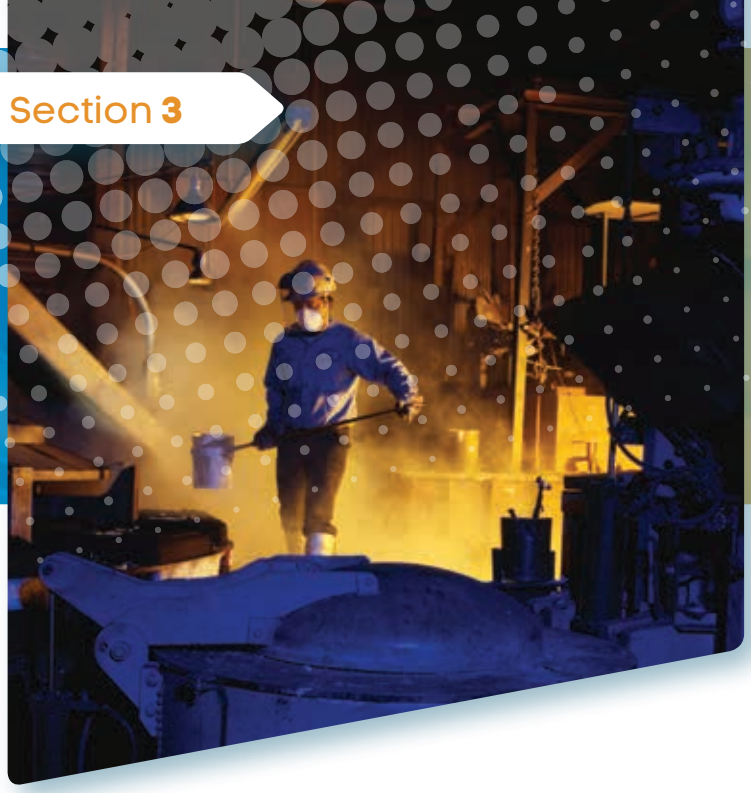
PMB07 Plastics, Rubber and Cablemaking Training Package

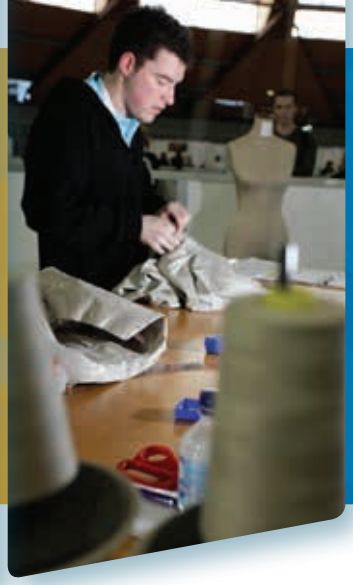
Apprentice and traineeship sign up has dropped substantially for this sector and further decline is expected in the wake of the Ford and Holden announcements that they will close Australian operations. Many component suppliers will be impacted and MSA expects to see this reflected in future training take up. Declining enrolments also reflect the gradual move from PMB07 Plastics, Rubber and Cablemaking Training Package qualifications into Process Manufacturing qualifications, which are packaged within MSA07 Manufacturing Training Package.

New PMB07 Plastics, Rubber and Cablemaking Training Package elective units of competency in heavy off-the-road and earth moving tyre repair were endorsed in 2013, providing coverage for a niche specialist market.

PMB07 enrolment figures

Commencements	2008	2009	2010	2011	2012	5 year change
Apprentices and trainees	2,564	459	578	293	392	-2,172
All students	2,854	1,575	1,424	1,499	1,349	-1,505
AQF 1	126	0	0	0	0	-126
AQF 2	271	158	122	93	114	-157
AQF 3	1,725	1,093	659	701	734	-991
AQF 4	717	293	617	682	470	-247
Diploma or higher	15	31	26	23	31	16





PMC10 enrolment figures

Commencements	2008	2009	2010	2011	2012	5 year change
Apprentices and trainees	278	173	228	166	164	-114
All students	285	179	51	104	156	-129
AQF 2	187	65	4	0	0	-187
AQF 3	98	113	43	97	152	54
AQF 4	0	1	4	6	4	4

PMC10 Manufactured Mineral Products Training Package

Enrolments in this sector have been relatively low over the past five years, and this continued in 2013 with downturn in the construction industry and corresponding redundancies across building products manufacturers, such as Boral.

Industry is hopeful that a federal government commitment to road and railway projects will help to breathe some life back into the sector and fuel training efforts.

LMT07 Textiles, Clothing and Footwear Training Package

The textiles, clothing and footwear (TCF) sector has been heavily impacted by structural adjustment, resulting in significant changes to its workforce needs and declining use of the LMT07 Textiles, Clothing and Footwear Training Package.

Current enrolments are declining in most TCF sectors, except in Fashion Design and Technology, which has seen consistent growth since its inception. Enrolments in Laundry Operations traineeships have been the strongest across LMT07 Textiles, Clothing and Footwear Training Package, however, this is in sharp decline now due to cutbacks in government subsidies.

Low enrolments are resulting in RTOs removing courses from their scope of delivery and many have also sold equipment and closed facilities. Sector-specific skill and knowledge of training providers is reducing and SMEs are finding training is not relevant or flexible enough to meet their needs.

In 2013 MSA commissioned a scoping study to determine current skill and training needs across the sector. This project proposed a redevelopment of LMT07 Textiles, Clothing and Footwear Training Package to align with industry demand for niche, high-quality skills, flexible development pathways and qualification outcomes that are suitable for SME environments.

Redevelopment of the LMT Training Package will commence mid 2014, to address the needs identified in the Scoping Report and changes required to meet the new Training Package Standards.

Sector-specific skill and knowledge of training providers is reducing and SMEs are finding training is not relevant or flexible enough to meet their needs.

LMT07 enrolment figures

Commencements	2008	2009	2010	2011	2012	5 year change
Apprentices and trainees	802	745	743	414	619	-183
All students	6,635	7,176	8,346	7,675	7,377	742
AQF 1	401	269	242	221	338	-63
AQF 2	1,521	1,842	2,746	2,174	1,834	313
AQF 3	1,584	1,258	1,595	1,672	1,699	115
AQF 4	1,516	1,707	1,698	1,554	1,590	74
Diploma or higher	1,613	2,100	2,065	2,054	1,916	303

Future directions

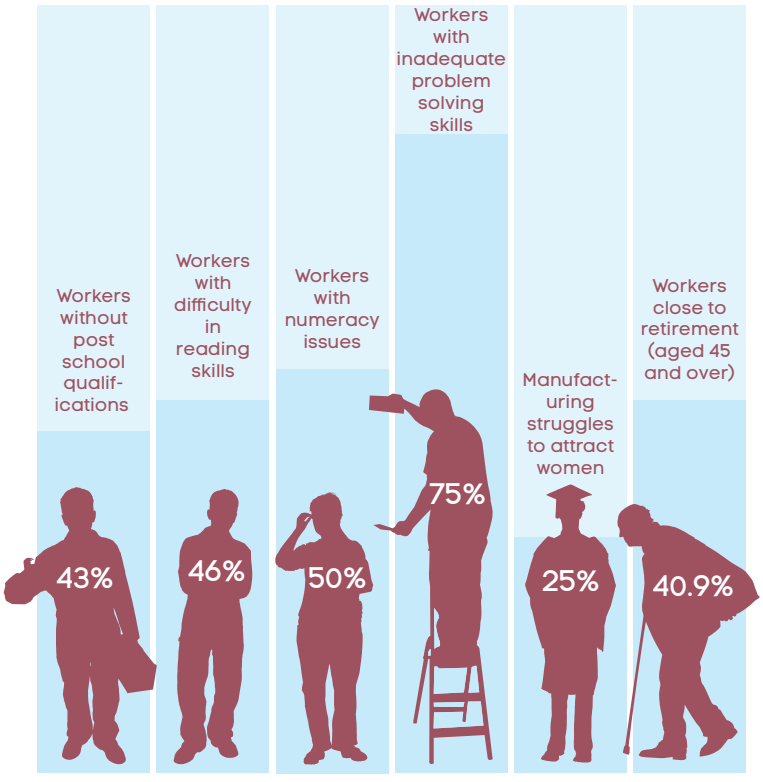
Learners in manufacturing

We know that the manufacturing workforce includes many workers without post-school qualifications (43%), has more than average LLN issues (46% of workers have difficulty with reading skills and 50% have numeracy issues), and has inadequate problem-solving skills (around 75% of workers). Manufacturing struggles to attract women (who make up around 25%) and its proportion of workers approaching retirement (aged 45 and over) has now jumped to around 40.9%.[46] These issues are further amplified by the need to upskill workers in the high level skills that will help manufacturing enterprises compete.

MSA has spoken in the past about the need to address these issues specifically and has outlined some current initiatives earlier in this report. It has also raised the difficulties all MSA sectors have in attracting and retaining high-quality candidates; public opinion on manufacturing is generally pessimistic and acts as a deterrent for people pursuing the many careers available.

VET and manufacturing must get better at attracting and engaging workers from all walks of life, and in particular from disadvantaged groups, which are significantly underrepresented in manufacturing employment.

Manufacturing workforce



46. AWPA. Future Focus. 2013 National Workforce Development Strategy. March 2013.

Mind the gap: engaging disadvantaged learners

Young people have become a particular concern. There has been extensive international focus on young people over 2013 and growing concern about high levels of youth disengagement from meaningful work opportunity, despite raising levels of educational attainment. According to ABS figures, the number of young people in Australia seeking full-time work has reached its highest level in 15 years (nearly double the rate for the whole population). A recent COAG report also confirms that nearly a quarter of young people are not fully engaged in study or work.[47]

Engaging young people has become an international crisis. Young people across the world are facing increasing job insecurity and casualisation of the workforce, rising youth unemployment and under employment, and are the ones most affected in falling apprenticeship numbers. Many are also impacted by the loss of opportunity following the migration of manufacturing operations to developing countries. Apprenticeships have come under greater focus in Europe now where they are being engaged as a strategy to reduce youth unemployment. Australia must be mindful of the exponential benefits provided by apprenticeships and continue reforms to make them more effective.

However, recent research conducted by NCVER found that youth participation in VET is the lowest it's been in a decade and changes to apprenticeship policy has seen 10,000 fewer under 19s starting an apprenticeship in the first three months of 2013, than in the same period in 2012. School level outcomes don't appear to be much better. Young people are finishing school, but attendance rates are down, literacy and numeracy scores have stalled, and the achievement gap is widening between young people from disadvantaged backgrounds and their affluent peers.[48]

According to the first Organisation for Economic Cooperation and Development (OECD) Survey of Adult Skills, high quality initial education is an important predictor for success in adult life, followed by flexible, skills-oriented learning opportunities throughout life.[49]

We are in danger of creating a generation of disillusioned, disengaged adults. Today's young people are socially aware and want to make a difference. While employers consistently raise concerns about the calibre of young applicants, it is also true that many are not given credit for their perspectives and capabilities. Given that they are navigating unprecedented change, it is hardly surprising that they are demanding a different employment arrangement. Young people have much to offer in creating high-tech, innovative and sustainable solutions in a digital world; the world of work and vocational education needs to get better at engaging these skills and interests.

Effective mentoring, supervision, flexible learning and a range of work experience opportunities have never been more important.

The other area in which Australia does not seem to be making much progress is engaging people with disabilities into the workforce. Participation rates (at around half the rate of people without a disability) have not moved over the last ten years, and this level is low compared to many OECD countries.[50] Australia ranks 21st out of 29 OECD countries in employment participation rates for those with a disability and 45% of people with a disability in Australia are living below the poverty line (double the OECD average).[51]

Preparedness for employment is the most significant barrier to employment for people with disability, and their participation in VET programs is proportionally low. VET needs to carefully tailor its programs to meet the needs of these learners, including provision of additional support in LLN, foundation skills and appropriate careers advice. Other important support services include those that help disadvantaged learners successfully enter and complete training programs. Funding regimes need to incorporate the needs of disadvantaged learners; one RTO raised concern that funding reductions for Certificate I and II particularly affect learners with a disability.

47. **COAG Reform Council.** Education in Australia 2012: Five years of performance. October 2013. 48. http://www.theaustralian.com.au/national-affairs/policy/more-are-completing-school-yet-the-gap-keeps-widening/story-fn59nlz9-1226749275779#sthash.RAMJ8QXq.dpuf. 49. http://www.oecd.org/newsroom/boosting-skills-essential-for-tackling-joblessness-and-improving-well-being.htm 50. Improving the employment participation of people with disability in Australia Discussion Paper Australian Government 2013. 51. PWC. Disability expectations, Investing in a better life, a stronger Australia. November 2011.

Manufacturing Workforce Development Service

MSA Manufacturing Skills Australia

COAG also confirms that we are not making progress with the engagement of Indigenous Australians and that the gap between the most and least disadvantaged students was the widest it has been since 2006.

Many stakeholders are concerned that not enough is being done to address the needs of these Australians or engage them productively in the economy, and that the future fallout from this inaction will be significant. They also express concern that traditional support structures, such as those offered by TAFE, are disappearing.

Australia has a strong imperative to successfully engage disadvantaged learners in VET skilling programs and employment opportunities. Not only because it faces workforce shortfalls that will limit economic growth, but also because it is missing out on a significant contribution.

According to Deloitte Access Economics, eliminating these 'equity gaps' would increase GDP by $12.2 billion, increase consumption by $5.9 billion and generate 118,000 full time jobs by 2020, notwithstanding additional personal and social benefits of increasing participation.[52]

Key priorities for future directions

Last year, MSA identified four priority areas for VET, and these are still key directives for developing the manufacturing workforce.

Improving quality

MSA continues to focus on updating its Training Packages and providing quality advice and resources to support consistent delivery. Over 2014 MSA will incorporate industry-driven assessment standards into its units of competency, in accordance with new Standards for Training Packages compliance requirements. This work is already underway and is being staged to align with other improvement work and to minimise the impact on RTOs - MSA is aware that RTOs are already grappling with the constant level of change in VET. For the most part, new assessment advice will be considered additional information to support quality delivery, and unless there is significant change to the unit outcomes, the new units will be deemed as equivalent to the previous units in most cases.

It is already evident that MSA's brokerage role for the NWDF, MWDS and WELL programs are adding significant value, and MSA will continue to strive for these quality outcomes. MSA is also working to lift VET quality by its participation in initiatives, such as the NSSC VET review and Australian Apprenticeship reform work.

Quality improvements must continue in achieving national consistency in the development of skills needed in industry. In addition, manufacturing is looking for better quality outcomes in the development of high-level skills, often for existing workers. It is on these that Australian manufacturing will transition to become a more sustainable industry. Enterprises need access to the latest skills and knowledge and be able to rely on high levels of VET professionalism.

Increasing participation

VET reforms must result in more flexible and inclusive education and training systems that help to increase access and participation for all Australians. Increased workforce participation levels depend on VET's varied entry pathways and support for those that need extra help. It is also critical that participation in manufacturing, by means of thin markets and expensive delivery, is not bypassed in an open training market.

Increasing participation is also an important role for enterprises. Trainees, apprentices and students all need opportunities to ground and improve their skills, and they need inspiration from those in industry who are succeeding. Increasing active industry

52. NVEAC National VET Equity Advisory Council. Equity Blueprint, 2011 - 2016 Creating Futures: Achieving Potential through VET. February 2011. Page 9.

As we move into 2014, it is an imperative that we make the best of our gifts and opportunities and use these to develop a competitive and dynamic manufacturing industry.

participation in the VET system is another important priority for VET's future. MSA believes that its one-on-one focus is helping to more fully engage enterprises in the VET system and encourage them to share their value with others across the industry.

Placing enterprises at the centre of VET

The opportunities for manufacturing are in high-quality, niche and value-add products and services that are highly customised to meet specific customer needs. They must be customer focused and globally relevant, with an ability to successfully operate internationally. If they are to actualise these opportunities, manufacturers need to maximise the value from Australia's high cost labour. The future of manufacturing is dependent on high-quality skills and capacity for innovation.

If VET is to place manufacturing enterprises at its centre, it will need to provide products and services that target skill development in these areas. MSA will continue to provide a critical role in helping the VET system and enterprises develop customised training solutions that help them pursue opportunities.

Lifting productivity

We have entered a time where we must generate more from less. Lifting productivity is an issue everywhere, in everything we do. MSA aims to maximise the value VET stakeholders receive from engaging training and workforce development. We need to get better returns on public investment. MSA believes that the ISCs play a critical role in helping enterprises and the VET system lift its productivity. They work continuously with enterprises and are well versed in what is working and not working in industry.

The future direction of VET and its products and services, like those of manufacturing generally, needs to be one of increasing flexibility and customisation.

As we move into 2014, it is an imperative that we make the best of our gifts and opportunities and use these to develop a competitive and dynamic manufacturing industry. **It is in the national interest.**

> "The tertiary system … needs to be flexible and forward-looking, with the capacity to respond quickly to meeting changing industry and individual needs. Developing adaptive capacity in the individual and the tertiary system will in turn facilitate innovation."[53]

53. AWPA. Future Focus. 2013 National Workforce Development Strategy. March 2013. Page13.

Training Package continuous improvement report

Section A: 2013 development work completed February 2014

Summary of change	Industry imperatives / rationale	Submitted to NSSC	Endorsed / ISC upgrade	Available on NTIS/TGA
Section A: 2013 continuous improvement activities completed February 2014				
Aeroskills Training Package				
MEA11 Version 2 Addition of 8 new units and one revised qualification	To address new regulatory requirements	4 July 2013	15 August 2013	23 August 2013
Chemical, Hydrocarbons and Refining Training Package				
PMA08 Version 4 Inclusion of new elective units for metalliferous processing and other processes	Industry requirements to cover gaps on PMA coverage	2 May 2013	17 June 2013	24 June 2013
PMA08 Version 5 Addition of new elective units for pipe fitting and flare operations.	Industry identified requirements	24 October 2013	5 December 2013	13 December 2013
Furnishing Training Package				
MSF Version 1 Fully reviewed and updated Training Package	Industry imperatives to update and revise qualifications framework and to address compliance issues	18 October 2013	7 November 2013	10 December 2013
Metal and Engineering Training Package				
MEM05v10 Inclusion of 3 new die correction elective units	To address industry identified requirements	4 July 2013	15 August 2013	27 August 2013
MEM05v11 Inclusion of Certificate II in Engineering Pathways	To address need for a relevant MEM qualification for institutional delivery	24 October 2013	5 December 2013	15 December 2013
Plastics, Rubber and Cablemaking Training Package				
PMB07 Version 2 Addition of electives for repair of heavy off road and earth moving tyres.	To address industry identified gaps for a niche specialist sector	2 May 2013	17 June 2013	6 July 2013
Sustainability Training Package				
MSS11 Version 3 Addition of three social sustainability elective units	To address gaps in elective choice	24 October 2013	5 December 2013	13 December 2013

Section B: Work in progress for completion June 2014

Summary of change	Industry imperatives / rationale	Submitted to NSSC	Endorsed / ISC upgrade	Available on NTIS/ TGA
Section B: Training Package continuous improvement activities commenced 2013, for completion by mid 2014				
Aeroskills Training Package				
MEA Version 1 New aeronautical/avionic Diploma and Advanced Diploma and all endorsed components updated to be compliant with new TP Standards	To address industry needs for MEA technician qualifications and compliance requirements	For completion mid 2014	TBA	TBA
Metal and Engineering Training Package				
MEM Version 1 Update all units and revise qualifications to meet new TP Standards and development of new units for identified areas	Compliance requirements and industry demand for units to address skill gaps	For completion mid 2014	TBA	TBA

The EScan provides valuable information on the training needs and priorities of MSA's industry sectors and these are integrated into MSA's maintenance and continuous improvement of the manufacturing Training Packages. Over 2014-2015, this work will be conducted alongside compliance activity that will see all MSA's Training Packages updated to comply with the new Training Package Standards (http://www.nssc.natese.gov.au/training_packages). This activity will provide a heightened focus on assessment requirements and provide opportunity for MSA to ensure that all training against manufacturing units of competency and qualifications reflect contemporary industry expectations.

Methodology and Bibliography

Methodology

MSA's 2014 Environmental Scan draws from a range of information sources. In the main, the focus has been on anecdotal, qualitative information gathered directly from MSA stakeholders. The EScan incorporates research undertaken by industry organisations, also conducted with MSA stakeholders.

Specifically, research for the 2014 EScan has included:

- Ongoing industry consultation. This includes interviews, site visits, phone consultation and workshops conducted by MSA's industry coordinators and representatives between January 2013 and December 2013. MSA relies heavily on this information to provide current intelligence and it has been used to direct the narrative of the 2014 EScan.

- MSA 2014 EScan surveys. MSA distributed two surveys over late 2013, one targeted questions to industry enterprises and associations, and the other to RTOs. Information generated guided the EScan content and provided some statistical evidence.

- MSA 2013 EScan interviews. Individual interviews were conducted with key MSA stakeholders specifically focusing on the themes that were emerging in MSA's other research. Discussions with representatives from unions, employer groups and industry associations were used to test these findings and add detail based on further research conducted by these organisations into the experience and needs of their member bodies.

- Continuous improvement activity. Projects conducted throughout 2013 into the continuous improvement of Training Packages, provided valuable information on MSA sectors. Industry coordinators and key project consultants were engaged to provide information on specific sector needs and implications on the sector Training Packages.

- Industry reports and surveys. MSA's stakeholders have added valuable material to the EScan by use of findings from research conducted over the last 12 months. In most cases, these findings have supported or concurred with the findings of MSA's own research and have been used throughout the EScan document as sources of validation for information presented. These documents are listed in the bibliography below.

- Statistics provided on employment and industry value of sectors has been sourced from the Australian Bureau of Statistics (ABS).

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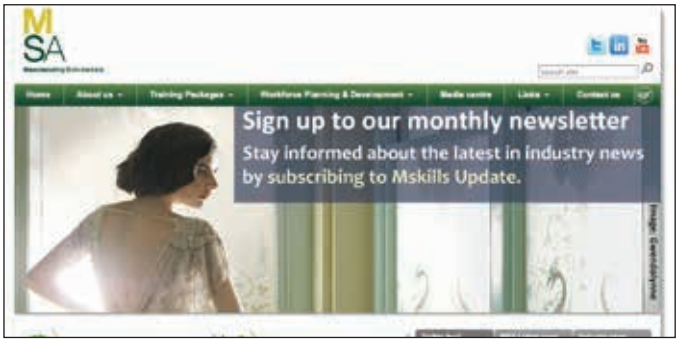

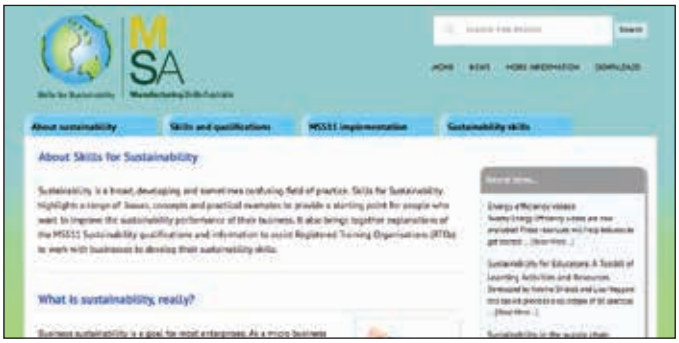

Consolidated list of occupations in demand

ANZSCO reference 6 digit code and occupation	Occupation/Job identified in the Environmental Scan	Qualifications	Justification/ evidence (qualitative and/or quantitative)
133211 Engineering manager	Engineering manager	Advanced Diploma of Engineering	Continuing shortage and identified in research for the review of the Skilled Occupations List and this report.
133512 Production manager (manufacturing)	Operations manager	Advanced Diploma of Process Plant Technology Diploma of Textile Technology and Production Management Diploma of Engineering - Technical Advanced Diploma of Polymer Technology Advanced Diploma of Manufactured Mineral Products Vocational Graduate Diploma of Engineering Advanced Diploma of Engineering Diploma of Engineering – Technical Diploma of Production Management	Identified as part of research for this report as an area of continuing shortage
133912 Environmental manager	Environmental manager	Vocational Graduate Certificate in Environmental Management Diploma of Environmental Monitoring and Technology Certificate IV in Environmental Monitoring and Technology	Identified as part of research for the review of the Skilled Occupations List and this report as an area of continuing shortage.

ANZSCO reference 6 digit code and occupation	Occupation/Job identified in the Environmental Scan	Qualifications	Justification/ evidence (qualitative and/or quantitative)
225411 Sales representative (industrial products)	Kitchen and bathroom designer, Technical sales representative	Certificate IV in Recreational Vehicle and Accessories Retailing Certificate IV in Design of Kitchens, Bathrooms and Interior Spaces Certificate III in Kitchens and Bathrooms - Retail Services Certificate III in Interior Decoration Retail Services Certificate III in Boating Services	Identified as part of research for the review of the Skilled Occupations List and this report as an area where there is a lack of appropriately skilled workers. This includes trainers and sales staff. There is a need for staff who have product knowledge in manufacturing who would be capable of upskilling into management roles.
232312 Industrial designer	Industrial designer	Advanced Diploma of Applied Fashion Design and Technology Advanced Diploma of Manufacturing Technology Certificate IV in Design of Kitchens, Bathrooms and Interior Spaces Advanced Diploma of Engineering	Identified as part of research for the review of the Skilled Occupations List and this report as an area of ongoing shortages.
232511 Interior designer	Kitchen and bathroom designer	Advanced Diploma of Interior Design Diploma of Furniture Design and Technology Diploma of Interior Design and Decoration Certificate IV in Interior Decoration Certificate IV in Design of Kitchens, Bathrooms and Interior Spaces	Identified as part of research for the review of the Skilled Occupations List and this report as an area of continuing shortage.
233511 Industrial engineer	Process engineer (industrial)	Advanced Diploma of Advanced Diploma of Engineering Diploma of Engineering - Technical	Continuing shortage identified in the Skilled Occupations List and in research for this report.
233512 Mechanical engineer	Mechanical engineer	Advanced Diploma of Engineering Advanced Diploma of Manufacturing Technology	Continuing shortage and identified in research for this report.

ANZSCO reference 6 digit code and occupation	Occupation/Job identified in the Environmental Scan	Qualifications	Justification/ evidence (qualitative and/or quantitative)
233612 Petroleum engineer	Petroleum engineer	Diploma of Process Plant Technology	Continuing shortage and identified in research for the review of the Skilled Occupations List and this report. This is an area where there will be increased demand from the resources sector as new operations are established.
233914 Engineering technologist	Engineering technologist	Vocational Graduate Certificate in Environmental Management Diploma of Environmental Monitoring and Technology	Identified as part of research for the review of the Skilled Occupations List and this report as an area of growing demand with a shortage of suitable trainers.
233915 Environmental manager	Environmental manager	Vocational Graduate Certificate in Environmental Management Certificate IV in Environmental Monitoring and Technology Diploma of Environmental Monitoring and Technology	Identified as part of research for the review of the Skilled Occupations List and this report as an area of growing demand with a shortage of suitable trainers.
233999 Mechatronics engineer, Production design engineer	Mechatronics engineer	Advanced Diploma of Engineering Certificate IV in Manufacturing Technology	Identified as part of research for the review of the Skilled Occupations List and this report. This is area with rapidly changing technology and a very limited supply of people with the required skills.
234312 Environmental consultant	Environmental auditor, Environmental officer	Vocational Graduate Certificate in Environmental Management Certificate IV in Environmental Monitoring and Technology Diploma of Environmental Monitoring and Technology	Identified as part of research for the review of the Skilled Occupations List and this report as an area of growing demand with a shortage of suitable trainers.
311411 Chemistry technician	Lab technician, Chemistry plant laboratory technician Chemical technical officer	Vocational Graduate Certificate in Surface Coating Technology Advanced Diploma of Laboratory Operations Diploma of Laboratory Technology Certificate IV in Laboratory Techniques	Continuing shortage and identified in research for the review of the Skilled Occupations List and this report.

ANZSCO reference 6 digit code and occupation	Occupation/Job identified in the Environmental Scan	Qualifications	Justification/ evidence (qualitative and/or quantitative)
311412 Earth science technician	Construction material technician/tester, Soil tester/ mineral assayer	Advanced Diploma of Laboratory Operations Diploma of Laboratory Technology Certificate IV in Laboratory Techniques Diploma of Environmental Monitoring and Technology Certificate IV in Environmental Monitoring and Technology	Continuing shortage and identified in research for the review of the Skilled Occupations List and this report.
311413 Environmental technical officer	Environmental officer	Diploma of Environmental Monitoring and Technology Certificate IV in Environmental Monitoring and Technology	Identified as part of research for the review of the Skilled Occupations List and this report as an area of growing demand with a shortage of suitable trainers.
312311 Electrical engineering draftsperson	Electrical engineering draftsperson, Engineering designer including 3D and CAD	Advanced Diploma of Engineering Diploma of Engineering - Technical	Continuing shortage and identified in research for the review of the Skilled Occupations List and this report.
312312 Electrical engineering technician	Electrical engineering technician, CNC setter and programmer	Advanced Diploma of Engineering Diploma of Engineering - Technical Certificate IV in Manufacturing Technology Advanced Diploma of Engineering (Aeronautical) Advanced Diploma of Engineering (Avionics)	Continuing shortage and identified in research for the review of the Skilled Occupations List and this report.
312411 Electronic engineering draftsperson	Electronic engineering draftsperson, Engineering designer including 3D and CAD	Advanced Diploma of Engineering Diploma of Engineering - Technical Certificate IV in Manufacturing Technology Certificate IV in Engineering	Identified as part of research for the review of the Skilled Occupations List and this report.
312412 Electronic engineering technician	Electronic engineering technician, CNC setter and programmer	Advanced Diploma of Engineering Diploma of Engineering - Technical Advanced Diploma of Aviation Maintenance Management (Avionics) Advanced Diploma of Engineering (Aeronautical) Advanced Diploma of Engineering (Avionics)	Identified as part of research for the review of the Skilled Occupations List and this report.

Consolidated list of occupations in demand

ANZSCO reference 6 digit code and occupation	Occupation/Job identified in the Environmental Scan	Qualifications	Justification/ evidence (qualitative and/or quantitative)
312511 Mechanical engineering draftsperson	Draftsperson Engineering designer including 3D and CAD	Advanced Diploma of Engineering Diploma of Engineering - Technical Certificate IV in Manufacturing Technology Certificate IV in Engineering	Identified as part of research for the review of the Skilled Occupations List and this report.
312512 Mechanical engineering technician	Process control technician, Engineering designer including 3D and CAD, Engineering technical officer, CNC setter and programmer	Advanced Diploma of Engineering Diploma of Engineering – Technical Certificate IV in Manufacturing Technology Certificate IV in Engineering	Identified as part of research for the review of the Skilled Occupations List and this report.
312912 Metallurgical or materials technician	Metallurgist technician	Advanced Diploma of Laboratory Operations Advanced Diploma of Engineering - Technical Advanced Diploma of Manufactured Mineral Products Advanced Diploma of Manufacturing Technology Diploma of Manufacturing Technology Advanced Diploma of Process Plant Technology	Identified as part of research for the review of the Skilled Occupations List and this report.
321211 Motor mechanic	Diesel mechanic	Certificate III in Engineering – Mechanical Trade Certificate III in Recreational Vehicle Service and Repair	Identified as part of research for this report. This is an area where there is an ongoing shortage of suitably qualified workers
312999 Corrosion technician	Corrosion specialist	Certificate III in Surface Preparation and Coating Application	Identified in research for the review of the Skilled Occupations List. This is an area where there is a shortage of relevant expertise.
322114 Metal casting trades worker	Foundry moulder, Engineering pattern maker, Metallurgist - advanced trade	Certificate III in Engineering - Fabrication Trade	Continuing shortage and identified in research for the review of the Skilled Occupations List and this report. Need for workers to be upskilled and capability in supervision.

ANZSCO reference 6 digit code and occupation	Occupation/Job identified in the Environmental Scan	Qualifications	Justification/ evidence (qualitative and/or quantitative)
322211 Sheet metal trades worker	Sheet metal worker	Certificate III in Engineering - Fabrication Trade	Continuing shortage and identified in research for the review of the Skilled Occupations List and this report. This is an area where there is need for funding for upskilling.
322311 Metal fabricator	Boilermaker, Metal fabricator – welder, Structural steel trades worker	Certificate III in Engineering - Fabrication Trade	Continuing shortage and identified in research for the review of the Skilled Occupations List and this report. This is an area where there is need for funding for upskilling.
322312 Pressure welder	Pressure welder	Certificate III in Engineering - Fabrication Trade Certificate III in Engineering - Mechanical Trade	Continuing shortage and identified in research for the review of the Skilled Occupations List and this report.
322313 Welder (first class)	Welder, Coded welder	Certificate III in Engineering - Fabrication Trade Certificate III in Engineering - Mechanical Trade	Identified as part of research for the review of the Skilled Occupations List and this report. This is an area where there are ongoing skills shortages, especially in the maintenance areas.
323211 Fitter (general)	Mechanical tradesperson, Maintenance fitter, Mechanical fitter, Mechanical fitter - advanced hydraulics and pneumatics, Plant and heavy transport mechanic, Machinist, Diesel fitter, Heavy equipment fitter CNC setter and programmer	Certificate III in Engineering - Mechanical Trade Certificate IV in Engineering	Continuing shortage and identified in research for the review of the Skilled Occupations List and this report.
323213 Fitter - welder	Fitter - welder	Certificate III in Engineering - Fabrication Trade Certificate III in Engineering - Mechanical Trade	Continuing shortage and identified in research for the review of the Skilled Occupations List and this report.
323214 Metal machinist (first class)	Machinist CNC setter and programmer	Certificate III in Engineering - Mechanical Trade Certificate IV in Engineering	Continuing shortage and identified in research for the review of the Skilled Occupations List and this report.
323215 Textile, clothing and footwear mechanic	Textile mechanic, Sewing machine mechanic	Certificate III in Engineering - TCF Mechanic Certificate III in Engineering - Mechanical Trade	Identified as part of research for the review of the Skilled Occupations List and this report. This is an area where there is a shortage of relevant expertise. Reliance on original equipment manufacturers for technical support.

Consolidated list of occupations in demand

ANZSCO reference 6 digit code and occupation	Occupation/Job identified in the Environmental Scan	Qualifications	Justification/ evidence (qualitative and/or quantitative)
323313 Locksmith	Locksmith	Diploma of Engineering - Advanced Trade Certificate III in Locksmithing	Continuing shortage and identified in research for the review of the Skilled Occupations List and this report.
331213 Joiner	Joiner (for the glass and glazing industry)	Certificate III in Timber and Composites Machining	Continuing shortage and identified in research for the review of the Skilled Occupations List and this report.
332111 Floor finisher	Floor finisher	Certificate III in Flooring Technology	Continuing shortage and identified in research for the review of the Skilled Occupations List and this report.
333111 Glazier	Multi skilled glass and glazing worker	Diploma of Stained Glass and Lead Lighting Certificate IV in Glass and Glazing Certificate III in Glass and Glazing	Continuing shortage and identified in research for the review of the Skilled Occupations List and this report. This is an area where qualifications have been recently revised to encompass a broader industry application focusing on manufacturing of windows.
341111 Electrician (general)	Electrical trades worker including HV DC motor control, Electrical fitter	Certificate III in Engineering – Electrical/Electronic Trade	Continuing shortage and identified in research for the review of the Skilled Occupations List and this report.
341112 Electrician (special class)	Electrical advanced trade worker	Diploma of Engineering – Advanced Trade	Identified in research for the review of the Skilled Occupations List and this report.
342111 Air-conditioning and refrigeration mechanic	Refrigeration and air-conditioning mechanic	Certificate III in Engineering – Electrical/Electronic Trade Certificate III in Engineering – Mechanical Trade	Continuing shortage and identified in research for this report.
342314 Electronic instrument trades worker (general)	Electronic instrument trades worker	Certificate IV in Aeroskills (Avionics) Certificate III in Engineering – Electrical/Electronic Trade	Identified in research for the review of the Skilled Occupations List and this report as an area of critical shortage.
342315 Electronic instrument trades worker (special class)	Instrument technician	Diploma of Engineering - Advanced Trade	Identified in research for the review of the Skilled Occupations List and this report as an area of critical shortage.
393111 Canvas goods maker	Canvas maker	Certificate III in Textile Fabrication	Identified as part of research for this report.

ANZSCO reference 6 digit code and occupation	Occupation/Job identified in the Environmental Scan	Qualifications	Justification/ evidence (qualitative and/or quantitative)
393113 Sail maker	Sail maker	Certificate III in Textile Fabrication Certificate III in Blinds, Awnings, Security Screens and Grilles	Identified as part of research for the review of the Skilled Occupations List and this report.
393211 Apparel cutter	Apparel cutter	Certificate IV in Clothing Production Certificate III in Clothing Production	Identified as part of research for this report. This is an area where there is demand for workers across the production process.
393212 Clothing patternmaker	Clothing patternmaker	Certificate IV in Clothing Production Certificate III in Clothing Production	Identified as part of research for the review of the Skilled Occupations List and this report. This is an area where there is demand for workers across the production process.
393213 Dressmaker or tailor	Dressmaker, Tailor	Certificate IV in Clothing Production Certificate III in Clothing Production	Identified as part of research for this report. This is an area where there is demand for workers across the production process.
393311 Upholsterer	Upholsterer	Certificate III in Upholstery Certificate III in Soft Furnishing	Identified as part of research for the review of the Skilled Occupations List and this report. This is an area where employers have difficulties in recruiting suitably qualified workers.
394111 Cabinetmaker	Kitchen and bathroom manufacturer, Kitchen and bathroom installer, Cabinet maker	Certificate III in Kitchens and Bathrooms - Retail Services Certificate III in Cabinet Making Certificate III in Timber and Composites Machining Certificate III in Furniture Making	Continuing shortage and identified in research for the review of the Skilled Occupations List and this report.
394211 Furniture finisher	French polisher	Certificate III in Furniture Finishing	Identified as part of research for the review of the Skilled Occupations List and this report. This is an area where employers have difficulties in recruiting suitably qualified workers.
394212 Picture framer	Picture framer	Certificate III in Picture Framing	Identified as part of research for the review of the Skilled Occupations List and this report. This is an area where employers have difficulties in recruiting suitably qualified workers.

Consolidated list of occupations in demand

ANZSCO reference 6 digit code and occupation	Occupation/Job identified in the Environmental Scan	Qualifications	Justification/ evidence (qualitative and/or quantitative)
394213 Wood machinist	Wood machinist, CNC programmer and operator	Certificate III in Timber and Composites Machining	Identified as part of research for the review of the Skilled Occupations List and this report. This is an area where employers have difficulties in recruiting suitably qualified workers.
399211 Chemical plant operator	Industrial gas production operator	Certificate IV in Process Plant Operations	Identified as part of research for the review of the Skilled Occupations List and this report. This is an area where there will be increased demand as new plants become operational.
399212 Gas or petroleum operator	Terminal operator	Certificate IV in Process Plant Technology Certificate IV in Process Manufacturing Certificate III in Process Plant Operations Certificate III in Process Manufacturing	Identified as part of research for the review of the Skilled Occupations List and this report. This is an area where there will be increased demand as new plants become operational.
399916 Plastics technician	Plastics fitter, Plastics mould maker	Certificate IV in Polymer Technology Certificate III in Polymer Processing	Identified as part of research for this report as an area where there are difficulties recruiting suitability qualified workers.
312999 Fibre composites technician	Composites tradesperson	Certificate III in Engineering - Composites Trade	Identified as part of research for the Skilled Occupations List and this report as an area where there is growing demand for skilled workers and a lack of available trainers.
711113 Glass production machine operator	Glass production machine operator, Glass processing worker	Certificate III in Manufactured Mineral Products Certificate II in Glass and Glazing	Identified in research for the review of the Skilled Occupations List and this report.
711513 Plastics fabricator or welder	Acrylic fabricator, Vinyl welder and fabricator	Certificate IV in Polymer Technology Certificate III in Polymer Processing	Identified as part of research for this report as an area where there are difficulties recruiting suitability qualified workers and there is a lack of available trainers.

ANZSCO reference 6 digit code and occupation	Occupation/Job identified in the Environmental Scan	Qualifications	Justification/ evidence (qualitative and/or quantitative)
711611 Sewing machinist	Sewing machinist, Embroiderer, Sample machinist Industrial sewing machinist	Certificate IV in Clothing Production Certificate III in Digitising and Computerised Embroidery Certificate II in Clothing Production (Intermediate) Certificate II in Clothing Production (Complex or Multiple Processes) Certificate III in Clothing Production Certificate III in Textile Production Certificate III in Blinds, Awnings, Security Screen and Grilles	Continuing shortage and identified in research for the review of the Skilled Occupations List and this report.
712311 Engineering production systems worker	CNC machine operator, Foundry operator, Furnace operator	Certificate III in Engineering - Production Systems	Identified in research for this report as an area where there has been difficulty recruiting suitably qualified workers.
811512 Dry cleaner	Dry cleaning operator	Certificate III in Dry Cleaning Operations Certificate II in Dry Cleaning Operations	Identified in research for the review of the Skilled Occupations List and this report. This is an area where there are difficulties in finding suitably skilled workers.
811513 Ironer or presser	Dry cleaning presser	Certificate III in Dry Cleaning Operations Certificate II in Dry Cleaning Operations	Identified in research for the review of the Skilled Occupations List and this report. This is an area where there are difficulties in finding suitably skilled workers.
821412 Home improvement installer	Floor coverings (carpet and vinyl laying) installer, Curtain and blind fitter, Shade sail and awning installer	Certificate III in Flooring Technology Certificate III in Blinds, Awnings, Security Screens and Grilles	Identified in research for the review of the Skilled Occupations List and this report. These occupations are in areas where there are a lack of training providers, high demand from niche markets and non completion of qualifications.
No ANZSCO Plastic fabricator	Plastic fabricator		Identified as part of research for the Skilled Occupations List and this report as an area where there increased demand for suitably skilled individuals.
No ANZSCO Plant technician	Plant technician	Certificate IV in Process Plant Technology	Identified as part of research for the Skilled Occupations List and this report as an area where there increased demand for suitably skilled individuals. The demand for workers will continue to grow as more LNG and CSG projects come on line.

Source: MSA, *Australian Workforce and Productivity Agency 2014 Skilled Occupations List Submission (unpublished).*

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