THE ENVIRONMENTAL SCAN
CONTEXT, PURPOSE
AND AUDIENCE

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 reliable indicators 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 are 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 shaping and 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 Education and Training and the body responsible for the endorsement of Training Packages. Its relevance however, 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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INTRODUCTION

Preparing a business for the future is no easy task; not for those managing the company nor for those in its workforce.

Changing business models is without doubt the dominant trend of 2015 as agrifood sectors gear up for better times, greater investment and expansion into new markets.

Hard decisions lie ahead with the emergence of only two viable strategies – niche production of premium, highly-differentiated goods and services or alternatively, large scale volume production. Businesses occupying the 'middle ground' will continue to come under increasing pressure.

Governments continue to extol the virtues of agrifood's potential as 'rebalancing' of a post-resource boom economy becomes a core issue for Australia. Agricultural exports are one of Government's five pillars for a diversified, world class economy with 2015 pivotal in setting policy, and importantly, clear action to give business leaders and investors much sought-after surety.

Economists believe the Australian dollar will stay well below US 80c throughout 2015. A falling rate has already priced export oriented sectors back into the market and enabled many smaller producers of high-value, niche products to gain entry. Asia's current middle class of 500 million will explode to 1.75 billion by 2020. Free Trade Agreements signed in 2014 with the three major trading partners of China, Japan and South Korea, further improve the potential bottom line for sectors such as beef, dairy, wheat, premium food and wine. The challenge now is for individual companies to unlock the value of these agreements by becoming 'export ready', culturally literate and market savvy.
Greater investment, both domestic and international, is flowing into agrifood supply chains as policy settings, growing demand and a shifting global economy converge into a potential game-changing era for Australian agrifood. From the enigmatic north of Australia and the big question of whether it will be industry’s new frontier, down to Tasmania where agrifood sectors are pivotal to transforming the future of its people, this industry has never been so much in the spotlight. In each and every state, agrifood sectors play a vital role.

Biosecurity remains a core priority for industry with market access and entry into new markets based on Australia’s proven commitment to clean, disease and pest-free produce. The Biosecurity Bill 2014 represents the largest biosecurity overhaul in 100 years.

Consumers continue to become ever more sophisticated and demanding. Products and services must exceed expectations if businesses are to retain customers’ loyalty. Social media, provenance and managing a company’s brand are more vital than ever, particularly for those seeking to open up markets outside of the supermarket duopoly. With nearly 70 per cent of Australia’s adult population online, businesses must engage, face outwards and capitalise on big data.

A strong social license remains non-negotiable. Agrifood sectors work in an emotionally-charged environment with virtually-connected consumers capable of exerting business-defining influence if animal welfare practices or natural resource management fall short of community expectations.

The cumulative effect of compliance, overlapping regulatory structures, high input costs and retail concentration demand businesses find efficiencies in every part of the supply chain. Increasing levels of mechanisation, automation, robotics and remote sensing will continue to transform agrifood away from being a labour intensive industry. Industry will be dominated by a new breed of technicians and technologists, astute marketers and innovative product developers, meanwhile any job or function that can be converted into an algorithm will be replaced by technology.

Industry-focused responses to the seasonal labour issue are needed to give business the confidence it needs to invest. Clever thinking is needed to resolve persistent skills shortages in key traditional occupations such as food technologists, bakers, veterinary nurses, jockeys and track riders.

Within this highly dynamic industry, which is subject to so many variables and so difficult to predict, what is the role of the vocational education and training (VET) system? We believe it’s twofold.

Firstly, to empower businesses and individuals with the best possible skills and knowledge so that they can confidently and quickly adapt to changing conditions and chart an informed course for their business. Future-proofing industry through re-skilling and upskilling to national standards, is a major task over the next five years.

The VET system’s second but untapped role is as part of the publicly funded research and development continuum; that is, exposing students to the very latest knowledge and new practices so that back in the workplace there is increased awareness of what’s possible, and ultimately, people skilled to enable its widespread application.

With around 90,000 enrolments in agrifood qualifications in any given year, there is vast untapped potential to drive a step-change in productivity, resolve the ‘extension’ conundrum and truly reposition the VET sector as a contemporary, high-value partner of industry.
However, the VET sector has many challenges of its own as it continues with ongoing reforms at both national and state level. New standards for Registered Training Organisations, opening up of the training market to competition, individual student entitlement and reduced funding levels have left many training providers struggling to establish a business model that does not compromise quality. Training providers have overwhelmingly told us that audit/compliance requirements and reductions to public funding per student are the two biggest impediments to meeting industry needs.

Industry supports an ‘open’ training market but there are growing calls for systemic transparency of training providers’ individual performance with many claiming VET to be a “hit and miss” experience. Inconsistent quality of training and assessment is a widespread criticism with overly shortened training, inappropriate delivery modes and providers’ narrowing of qualifications commonly cited complaints. Notably this year, we have heard from a number of sectors and industry bodies that, in the absence of transparency, are creating informal shortlists of ‘good quality’ providers in attempts to safeguard companies.

Industry is keen to stress that open markets only function well where informed consumers exist, and that is only possible where transparency is in place. Informed consumers will drive higher quality outcomes, greater innovation and reduce reliance on regulation, as few individuals will knowingly spend their money with poor performing service providers. In a tightening fiscal environment, where industry will be expected to pay for a greater share of the skill development agenda, the lack of transparency remains a major disincentive to increasing enterprise investment.

Enduring issues of workforce attraction, development and retention continue to dominate industry’s priorities for 2015:

+ Attracting motivated, smart and adaptive workers
+ Building world-class business capability and risk management expertise
+ Increasing enterprise’s capability to adopt new technologies and research outcomes
+ Building higher level skills and knowledge within the existing workforce
+ Retaining the best and brightest workers.

Each year we try to capture the underlying story that flows through our conversations with those doing the jobs, with their money invested and those charged with representing industry’s views. The title of this year’s Scan ‘What lies beneath’ conveys the sense of cautious optimism and opportunity that exists on the surface but beneath which lie many hard truths - a workforce facing a significant skills challenge, widespread structural change, technological transformation of the industry, and the VET system’s ongoing challenge to consistently deliver a quality outcome.

Again this year, members of our Board and executive have travelled to each jurisdiction to hear first-hand the views of industry and the training system. Over 80 per cent of workshop attendees and companies were new to our consultation process – a deliberate strategy to ensure we capture changing sentiments and evolving priorities. To each and every one that contributed to this year’s Scan, our heartfelt gratitude for sharing your passion, humor and remarkable insights.

The opportunities that sit before industry are spectacular but not a foregone conclusion. Without a determined and sustained response to what is an unprecedented skills challenge few companies will be in a position to reap the benefit. What’s needed sits beyond the expertise and resources of any single party; it will involve industry, governments, communities and the VET sector working in partnership, in earnest. We hope that this year’s Environmental Scan will in no small way enhance their capacity to act.

Geoff Richards
Chair
AgriFood Skills Australia
February 2015
GLOBAL DEMOGRAPHY
WORLD POPULATION GROWTH

For 20 years there has been consensus that global population would peak in 2050 at around 9 billion. A new United Nations global study suggests there is now an 80 per cent probability that the number of people on the planet, now 7.2 billion, will go well beyond that figure and increase to between 9.6 and 12.3 billion in 2100, posing grave challenges for food supplies, healthcare and social cohesion. Sub-Saharan Africa is set to be the fastest growing region by far, with population rising from one billion today to between 3.5 billion and five billion in 2100. The fall in fertility rates that began in the 1980s in many African countries and had been expected to continue, has not eventuated according to the most recent data.

For Australia’s producers, the most important statistic is the extraordinary projected growth of the middle class in the Asia Pacific. In 2009, the region accounted for 28 per cent of the world’s middle class, or 525 million people. By 2030 that figure is expected to be 66 per cent, or 3.2 billion people. Rising incomes mean a switch to protein-rich diets and sharp rises in demand for meat, dairy, fruit, vegetables and pulses.

Based on recent trends in net overseas migration and increased life expectancy (Australia ranks sixth in the world), Australia’s current population of 23.68 million is projected to increase to between 36.8 and 48.3 million by 2061.

POPULATION AGEING

The economic future of any country is heavily shaped by its demography. For many developed nations in the world, the story is one of an ageing population as a result of better healthcare and birth control.

Japan is well known for having one of the oldest populations in East Asia but several nations in the region - South Korea, Hong Kong, Taiwan and Singapore - are expected to age faster. While the West had time between industrialization and the ageing process, Asia will need to adapt far more rapidly.

Running counter to the trend are Indonesia, the Philippines and Sri Lanka which will reap the economic rewards of the ‘demographic dividend’ by virtue of a young population entering into an expanding workforce.

Longer term, the global economy could witness the emergence of a new world order as a result of ageing workforces with several of the world’s economic powerhouses – Germany, Brazil, Japan, and China – all projected to face crippling labour shortages by 2030.

A growing ‘age dependency ratio’ has major implications for a country’s revenue base and government spending, its infrastructure planning and social spending. From a policy perspective, Australia has already increased its retirement age to 67, broadened superannuation and is making inroads to lift female participation.

At an industry level, individual enterprises need to become adept at job design and re-design to support an increasingly older workforce transition and remain productive. Australia’s median age is currently 37.3 years with a life expectancy at birth now 82.1 years.

FOOD FOR ALL

Only 55 per cent of the world’s crop calories feed people directly; the rest are fed to livestock (36 per cent), turned into biofuels or industrial products (9 per cent). According to the UN’s Food and Agriculture Organisation (FAO), over 805 million or 1 in 9 people suffered from hunger in 2014. It estimates that over two billion suffer from micro-nutrient deficiencies or ‘hidden hunger’.

Most of the world’s undernourished are still found in Southern Asia (276 million) followed by sub-Saharan Africa (214 million), Eastern Asia (161 million) and Latin America/ Caribbean (37 million). A further 117 million are found in other regions across the globe. Latest FAO data indicates a continuing easing of food price indexes from the 2011 high (Figure 1).

FIGURE 1.  FAO FOOD PRICE INDEX 2010-2014

SOURCE: FAO

2 2013 - Australian Bureau of Statistics ‘Population Projections, Australia, 2012 (base) to 2101’
3 2014 - The Boston Consulting Group ‘The Global Workforce Crisis.$10 Trillion at Risk’
Australia remains one of the most food-secure nations in the world. On aggregate, it produces enough to feed the nation nearly three times over. Farming and agriculture account for nearly two-thirds of the nation’s land - more than half of Australia is grazing country. Six per cent of the nation or 460,000km sq. is classified as suitable for growing crops. Australia continues to have high levels of food wastage with close to eight million tons of food thrown away each year.

Australia will not become the food bowl of Asia as some suggest - it currently produces around one per cent of global agricultural production. Its enduring contribution to the global food security challenge, and many would argue a more important role, will be Australia’s research into critical challenges such as breeding of salt-tolerant, drought and disease resistant crops.

**PLANET FUNDAMENTALS**

**WATER SECURITY**

Although more than 70 per cent of the planet is covered in water, only 2.5 per cent is drinkable freshwater. Of that freshwater, 70 per cent goes to irrigation, 20 per cent to other industries and the remaining 10 per cent is used for domestic purposes. The United Nations estimates that by 2025 over two-thirds of the world’s population will be living in water stressed countries as a result of falling water tables, increased food production and Asia’s widespread move towards animal protein which can consume 8-10 times more water than grain production.

Despite occupying 5.6 per cent of the world’s landmass, Australia receives little more than one per cent of the world’s available freshwater resources. According to the Bureau of Meteorology (BOM) approximately 85 to 95 per cent of rainfall in Australia is lost to evaporation or transpiration. Access to freshwater varies considerably across the continent; drought is frequent, as is the occurrence of flooding. Managing Australia’s water more efficiently and increasing the capture and storage of water will be critical in maintaining, and ideally increasing, agrifood production levels given current predictions for the declining availability of freshwater (Figure 2).

**CLIMATE VARIABILITY AND ADAPTATION**

2014 was the warmest year across global land and ocean surfaces since records began in 1880. Warming of the atmosphere and oceans in and around Australia is occurring. Air and ocean temperatures across Australia are now, on average, almost a degree Celsius warmer than they were in 1910, with most of the warming occurring since 1950. Sea-surface temperatures in the Australian region have warmed by 0.9°C since 1900. Seven of the ten warmest years on record have occurred since 1998.

Future weather and climate scenarios will impact on almost all aspects of agrifood (Figure 3). Increased warming has significant implications for the geographic suitability of specific crops, livestock and aquatic species. With wine grapes famously sensitive to subtle shifts in temperature, rain and sunshine, research has suggested that a radical re-ordering of the world’s traditional wine regions could occur. Predictions that up to 74 per cent of Australia’s established wine grape growing regions may no longer be suitable by 2050 are highly contentious. Far less so are predictions that more regions worldwide could become suitable for viticulture.

**SHIFTING ECONOMIC FORCES**

**AN UNEVEN RECOVERY**

According to the World Bank, the global economy continues to struggle to gain momentum with high-income countries dealing with legacies of the global financial crisis and emerging economies less dynamic than in the past (Figure 4). In 2014 China grew at its slowest annual rate since 1990.

According to the latest estimate from the International Monetary Fund (IMF), the world economy will grow by 3.5 per cent in 2015, and by 3.7 per cent in 2016. Both estimates are down 0.3 percentage points from the IMF’s previous forecast in October 2014.

Oil underpins a third of all energy consumed around the globe. Since 2008, the US has boosted its oil production by nearly 90 per cent as new technology enables extraction of oil from shale rock. OPEC nations meanwhile have continued to keep production levels stable. Demand is also falling as the economies of Europe and China slow down. In January 2015, increased supply and weakening demand converged resulting in oil prices falling to their lowest levels since the 2009 economic crisis.

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4 2014, CSIRO. State of the Climate – 2014
5 2013, Hannah L et al, Climate change, wine and conservation
FIGURE 3. FUTURE CLIMATE SCENARIOS FOR AUSTRALIA

- Annual-average rainfall projections uncertain in northern Australia
- Frequency and intensity of extreme daily rainfall to increase for most regions
- Sea-level rise will increase frequency of extreme sea-level events
- Ocean acidification will continue
- Potential long-term decrease in number of tropical cyclones but increase in intensity
- Temperatures to rise, with more hot days and fewer cool days
- Extreme fire-weather days to increase in southern Australia, with a longer fire season
- Annual-average rainfall to decrease in southern Australia, with an increase in droughts

SOURCE: CSIRO

FIGURE 4. WORLD GDP GROWTH 2015

SOURCE: International Monetary Fund
In July 2014, the BRICS nations (Brazil, Russia, India, China, and South Africa) announced the founding of the New Development Bank, headquartered in Shanghai. It aims to foster greater financial and development cooperation among the five economies and is an alternative to the World Bank and IMF. The BRICS’ voting power in both institutions does not reflect their economic strength, making it impossible for them to increase their influence.

SHIFTING MANUFACTURING BASE

For many decades most of Asia, Eastern Europe and Latin America have been considered low-cost manufacturing nations. By comparison Western Europe, the US and Japan have been viewed as high cost producers. Years of steady change in wages, productivity levels, energy costs and currency values have all quietly converged to dramatically redraw the map of global manufacturing cost competitiveness (Figure 5).

Over the last decade, Australia’s global cost competitiveness in manufacturing has sharply deteriorated. Of the world’s 25 leading manufacturing exporting economies, Australia was the 7th most high cost country in 2004. By 2014 it had become the most expensive. Analysis reveals that:

‘...the resources and infrastructure boom contributed to the loss of cost competitiveness in manufacturing by driving up wages and the Australian dollar and by drawing away capital. Manufacturing wages rose by 48 per cent over the past decade, and capital inflows from commodity exports caused Australia’s currency to appreciate by 21 percent against the US dollar’.

Australia’s future manufacturing base will be in high value products where Australia is naturally competitive. To do so, companies will need to improve their individual competitiveness by investing in technology and new plant, skills development and productivity improvements.

At a whole of economy level, Australia ranks 22nd in global competitiveness but has been dropping continuously in the rankings since reaching its best rank of 15th in 2009. The World Economic Forum ranks Australia’s labour market efficiency 56th out of 144 countries. The 2013-2014 report states ‘The main area of concern remains the labor [sic] market. Australia ranks 136th for the rigidity of its hiring and firing practices and 132nd for the rigidity of its wage setting’.

FIGURE 5. COMPARISON OF THE TOP 25 EXPORTING ECONOMIES

SOURCE: U.S. Economic Census; U.S. Bureau of labor Statistics; U.S. Bureau of Economic Analysis; International Labour Organisation; Euromonitor International; Economica Intelligence Unit; BCG analysis. Notes: The index covers four direct costs only. No difference is assumed for other costs, such as raw-material inputs and machine and tool depreciation. Cost structure is calculated as a weighted average across all industries.

1 Adjusted for productivity


FREE TRADE AGREEMENTS

Australia’s three leading North Asian trade partners – China, Japan and Korea – account for more than 61 per cent of Australia’s exports. The trifecta of Free Trade Agreements (FTAs) struck with these countries in 2014 provide Australian businesses with preferential access to a market of around 1.5 billion people.

By 2030, the Asia Pacific will account for 66 per cent of the world’s middle class, or 3.2 billion people with sharp rises in the demand for meat, dairy, premium food and wine. The challenge now is for individual companies to unlock the commercial benefits from these agreements by becoming export ready, culturally literate and market savvy.

On full implementation of the Korea-Australia Free Trade Agreement (KAFTA), 99.8 per cent of Australian goods exports will enter Korea duty free.

Under the Japan Australia Economic Partnership Agreement (JAEPA), which is expected to enter into force in early 2015, tariffs will be dramatically reduced on a wide range of Australian export goods, including beef, dairy, horticulture, seafood and wine.

Under the China-Australia Free Trade Agreement (ChAFTA), more than 85 per cent of Australian export goods will be tariff free upon entry into force, rising to 93 per cent after four years. Some of these goods are currently subject to tariffs of up to 40 per cent. Upon full implementation of ChAFTA, 95 per cent of Australian export goods to China will be tariff free. Industries to substantially benefit include the beef, dairy, horticulture and food processing sectors.

Australia is engaged in six other FTA negotiations – two bilateral FTA negotiations: India and Indonesia, and four plurilateral FTA negotiations: the Trans-Pacific Partnership Agreement (TPP), the Gulf Cooperation Council (GCC), the Pacific Trade and Economic Agreement (PACER Plus), and the Regional Comprehensive Economic Partnership Agreement (RCEP). The additional countries covered by these negotiations account for a further six per cent of Australia’s total trade.

DOLLAR VALUE

Australia’s dollar significantly depreciated in 2014 largely due to the fall in commodity prices. Having remained at and sometimes above parity with the US dollar for most of 2012 and 2013, the fall of the Australian dollar has been welcomed by exporting sectors and hit a four-year low of US$0.815c in December 2014. Some commentators suggest that the dollar could fall close to US$0.70c by the end of 2015.

As the mining boom fades, the OECD8 believes that Australia’s key challenge will be to rebalance the economy to sustain growth. It notes that Australia’s tax mix is low on consumption tax and high on income tax and recommends Government shifts its dependency away from income and transaction taxes by generating more revenue from the goods and services tax (GST). The majority of fresh produce and staples are currently GST exempt within Australia8.

CONNECTED WORLD

Almost three billion people or nearly 40 per cent of all people on Earth are now connected to the internet. The majority of these are found in East Asia (41 per cent), followed by Europe (26 per cent) and North America (14 per cent). In Australia, there were nearly 12.5 million internet subscribers at the end of June 2014.

Plans to expand internet coverage and literally connect the world will be driven increasingly by the private sector and its dominant players. Facebook’s goal is to launch a fleet of solar-powered drones to connect the billions of people currently off the grid. Google has announced Project Loon, a network of balloons travelling on the edge of space which will connect people in rural and remote locations around the globe to the internet.

Big data is quickly becoming a critical driver of business success but companies will need to be much smarter in extracting its value. Companies with the most advanced analytics are five times more likely to make decisions faster than their peers; twice as likely to be in the top 25 per cent of financial performance within their industry; and three time as likely to execute their decisions as intended10.

While consumer usage of social media is now mainstream, businesses are lagging behind and missing opportunities to grow brand awareness and business opportunities. While 69 per cent of online Australians use social media, only 36 per cent of small businesses and 48 per cent of medium-sized businesses have a social media presence.

Of those small to medium sized businesses that have invested in social media, almost three in ten small businesses have no strategy to drive traffic to their sites, reflecting a lack of strategic approach for social media in small businesses generally. Less than a quarter of small businesses that used social media have a strategic plan for its use, compared to just under half of medium businesses and just under three-quarters of large businesses.

Perhaps belatedly, businesses are becoming increasingly aware that no data is safe and cyber security is now an unavoidable part of doing business. Hacking and security breaches of companies became mainstream in 2014 with global entities such as AOL, Adobe, European Central Bank, Ebay and JP Morgan Chase all hacked for sensitive information.

8 OECD – 2014 OECD Economic Survey of Australia – Rebalancing to sustain growth
10 Bain & Company worldwide study of 400 large companies
DISRUPTIVE TECHNOLOGIES

Mechanisation, automation, intelligent robotics, and remote sensing (MARRS) will impact upon most industries, particularly labour intensive sectors such as agrifood. Unmanned aerial vehicles or drones, additive manufacturing, next generation broadband, cloud computing and smart personal devices will continue to reshape rural Australia and optimise finite resources. CSIRO suggests that new net-enabled technologies could increase productivity by 50 per cent over the next 20 years with significant benefits flowing through to the supply chain, biosecurity and food safety, traceability and provenance, biomass and carbon accounting. New and emerging technologies\(^1\) include:

+ Air, soil and crop sensors which combined with drones, enable real-time understanding of current farm conditions and are a fundamental platform to an automated farm;
+ Vehicle and equipment telematics enable predictive and maintenance intra-tractor communication, a prerequisite to ‘farm swarm’ operations;
+ Livestock biometrics include collars with GPS, radio frequency identification and biometrics which relay vital information about individual livestock in real-time;
+ Variable rate swath control uses geolocation technologies to assess the relative productivity of different areas so that tractors or agbots can then automatically adjust inputs at variable rates;
+ Rapid iteration selective breeding is the next generation of selective breeding where the end-result is analysed quantitatively and improvements are suggested algorithmically;
+ Precision agriculture involving real time adaption to field variations by use of satellite imagery, advanced sensors and automated decision-making;
+ Robotic farm swarms combine dozens and potentially hundreds of agbots with thousands of microscopic sensors, which together monitor, predict, cultivate and extract crops from the land with practically no human intervention.

Sense-T is creating the world’s first economy-wide intelligent sensor network that integrates data sources to build a digital view of Tasmania\(^2\). A partnership between the University of Tasmania, CSIRO and the Tasmanian Government, it collects data from a range of sources, including innovative new sensors currently being road-tested in a number of farms, aquaculture businesses and vineyards across the State.

Caterpillar has started using industrial analytics to help its dealers succeed. The company harnesses and analyses data from its machines, engines and services and transmits the resulting insights to dealers, enabling them to anticipate problems, proactively schedule maintenance and help customers manage their fleets more efficiently.

While computing and sensor technologies have been used by Australian farms for two decades, adoption has been uneven and limited, rarely cost effective or integrated. The so-called Industrial Internet of Things (IIoT) is considered the real game-changer, the impact of which is predicted to extend to two-thirds of the world economy and particularly agriculture\(^3\). IIoT is a network of physical objects, systems platforms and applications that contain embedded technology to communicate and share intelligence with each other, the external environment and with people. With unprecedented connectivity will come unparalleled risk if companies do not have the skills and knowledge to manage the safety, financial and privacy implications.

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11 Policy Horizons Canada, Envisioning, Business Insider Australia
12 www.sense-t.org.au
13 World Economic Forum 2015 - Industrial Internet of Things: Unleashing the Potential of Connected Products and Services
LATEST INDUSTRY INTELLIGENCE
TOP 10 MICRO FACTORS

CONSOLIDATION AND BIFURCATION

Profound structural change has occurred in the agrifood industry over the past three decades as Australia has transitioned from a low to a high cost exporter. Hard decisions lie ahead for most businesses in most sectors with the emergence of only two viable strategies – niche production of premium, highly-differentiated goods and services or alternatively, large scale volume production. Businesses occupying the ‘middle ground’ are coming under increasing pressure (Figure 6).

FIGURE 6. AGRIFOOD BUSINESS STRATEGY – ADVANTAGES AND CHALLENGES

Niche Producer
- Farmers or food processing business – typically small in size – that have successfully captured price premiums through producing highly differentiated products for specific customer segments or markets.
- Main sources of advantage:
  - Differentiated products
  - Provenance
  - Novel marketing approaches
  - Alternate sales channels
  - Elevated importance of brand
- Key challenges:
  - Growth
  - Access to capital
  - Maintaining unique product characteristics and/or production techniques
  - Compliance with informal regulation
  - Developing new sales channels
  - Finding a buyer (eventually)

Middle Ground
- Small to medium scale farms or food processing SMEs that are no longer able to compete on price and lack the capital and capabilities required to service major domestic and overseas markets or develop new ways of value-adding. These enterprises are potential take over targets.
- Main sources of advantage:
  - Limited
- Key challenges:
  - Achieving scale
  - Seek additional capital required to remain in business
  - Sell up to a larger competitor

Volume Producer
- Corporate or large productive family farms and large national or multinational food processing companies that have invested in the capabilities and infrastructure required to meet the need of supermarkets and corporate overseas markets.
- Main sources of advantage:
  - Scale efficiencies
  - Quality and safety
  - Consistency
  - Capacity to invest in R&D
- Key challenges:
  - Achieving ongoing productivity gains
  - Maintaining a safe and reliable supply of products
  - Access to labour and capital
  - Compliance with informal regulations
  - Maintaining social license

* High level estimate

SOURCE: Nous Group
Change is being driven by a confluence of several factors:

+ Between 1982 and 2013, consolidation within the agricultural sector saw the average farm size increase 13 per cent from 2,720 to 3,077 hectares and the overall number of farms reduce by more than a quarter. While the biggest drop occurred during the millennium drought, better times, the opportunity to repay debt and water buy-backs have witnessed a steady exit from the sector. The size of farms is steadily increasing as land is acquired by neighbouring producers or corporate investors. Larger family businesses are adopting corporate approaches through the use of professional management teams, external directors, boards of management and external equity.

+ Within the wildcatch sector, the establishment of Marine Park Reserves, rise of the offshore oil and gas sector, cumulative effects of regulation, and buy back of fishing licences resulted in a 40 per cent decrease in the number of licensed fishermen between 2001 and 2011. Skilled crews, particularly skippers, engineers and divers continue to move to the oil and gas sector to fill existing and well-remunerated shortages.

+ Small to medium enterprises (SMEs), which comprise 98 per cent of the 22,000 food and beverage business in Australia, are currently facing the greatest business pressures. Many are family owned and have grown opportunistically rather than strategically. Few possess the scale or management expertise needed to meet the demands of the major supermarket retailers who generally demand minimum sale thresholds, year-round supply capability, high quality and safety standards supported by sophisticated IT systems, sophisticated marketing support and above all, attractive trading terms. Many SMEs also lack the agility and clever innovative marketing approaches of many niche processors.

+ Crowdsourcing of solutions and online co-creation is removing the financial and logistical limitations faced by niche businesses when seeking new ideas. Crowdfunding websites such as Fundable are also creating new ways for entrepreneurial start-ups to generate capital outside of traditional and often restrictive avenues for business investment. The growth in online, direct-to-consumer sales channels is giving younger and social media savvy entrepreneurs a route to market outside of the supermarket channel.

+ Investment funds, foreign corporates and high-wealth individuals continue to regard many of agrifood’s assets as undervalued. Once sizeable organisations in their own right now find themselves cost centres of multinationals focussed on return, and needing to bid for capital from their international parent against other parts of the business around the world. Conscious of the strategic importance of food production, there is growing acquisition of food processing plants and tracts of agricultural land, and increasing interest from Australian investors.

+ Some small businesses are diversifying to increase income streams and reduce risk. Companies now have opportunities to look more broadly into food, fibre, energy and bio-based products. As provenance becomes more valued and consumers search for new experiences, popularity of food tourism and agri-tourism is increasing through food and wine trails, farm stays, outback adventures, conservation volunteering and processing plant tours. As a consequence, there are demands for new and unique combinations of skills required by individual businesses.
**RETAIL CONCENTRATION**

For several years, the two major retailers have dominated Australia’s food and grocery market, commanding a 72.5 per cent share of an industry valued at $82 billion (Woolworths with 39 per cent; Coles with 33.5 per cent)\(^{14}\). By comparison, the combined market share of the top two food and grocery retailers in the UK is 48 per cent, 44 per cent in France and 24 per cent in the US.

Commentators suggest that the next couple of years will be defining for the retail food market with super discounters such as Aldi and Costco not just competing with the incumbents, but undermining them with a radically altered model. The new breed of cut-price supermarkets is totally focused on cheap prices and aims to price items 20 per cent lower than the two majors. Aldi now holds 10.3 per cent of the market, with 340 stores and high income families accounting for 50 per cent of shoppers.

Woolworths and Coles rank 18th and 22nd respectively in terms of global retailers’ revenue. Aldi ranks eighth\(^{15}\). There are reports that German owned chain Lidl and Danish discounter Netto are scouting Australian sites.

Aldi’s growth will provide little relief for branded food producers with the German retailer specialising in home brand products and the two big retailers continuing their focus on home brand merchandise. Adoption of a ‘good, better, best’ private label strategy has given consumers growing confidence in the products which already account for over 22 per cent of sales. Private labels in the UK account for 46 per cent of sales.

What this means for agrifood producers is varied but will drive dramatic changes to business models and market focus:

+ For manufacturers it tends to force the commoditisation of all but the most innovative, niche or strongly branded products. Some producers are manufacturing both home brand produce and supplying their own branded product;
+ Some producers are choosing not to supply either major retailer and instead pursue alternative channels such as independent retailers and wholesalers, farmers markets, or strike strategic alliances with the hospitality sector;
+ As continuous discounting narrows the gap between the prices paid for the traditional brands and retailers’ home brands, manufacturers must have a clear long-term strategy for product innovation and brand development;
+ Private standards developed by supermarkets continue to increase in volume and scope. Ranging from aesthetics and logistics to the size, colour, shape, production, packaging and handling, they also include food safety requirements and ‘credence’ claims such as fair trade and animal welfare. The costs associated with applying the standards – which typically are not harmonised across supermarkets – and of undertaking third party auditing are borne by producers;
+ For those supplying the retailers, there is potential for longer-term supply contracts but large contracts and lack of competition in the marketplace can leave producers over committed and significantly reduce their power to negotiate already tight margins, terms and conditions. Larger producers will be increasingly looking to optimise opportunities generated through the FTAs.

There are suggestions that the market power of the two big supermarkets may plateau with increasing public criticism of supermarket practices with suppliers and the Australian Competition & Consumer Commission’s decision in October 2014 to launch legal action against Coles related to alleged unconscionable conduct against five suppliers.

**ANIMAL WELFARE**

Agrifood sectors work in an emotionally-charged environment with virtually-connected consumers capable of exerting business-defining influence if animal welfare or natural resource management practices fall short of community expectations. Major retailers seeking to increase their value proposition to consumers echo these expectations and continue to drive industry-wide change to farming and fishing practices.

The RSPCA’s Approved Farming Scheme is open to producers or brand owners and establishes animal welfare standards that go beyond regulatory requirements, enables differentiation and marketing of products from RSPCA Approved farms, and offers consumers who buy pork, chicken, turkey and eggs a higher welfare alternative.

Coles is signatory to the World Wide Fund for Nature (WWF) Global Seafood Charter and has stated that all Coles seafood will be responsibly sourced by 2015. Coles Brand fresh pork, ham and bacon is soy stall free and Coles brand eggs are cage free. Woolworths sell only non-caged eggs and will only use non-cage produced eggs in ingredients of its own brand products by December 2018. Fresh pork meat is sourced from farms that only use stalls for less than 10% of the sows’ gestation period. McDonalds will phase out cage eggs by 2017.

Live export remains a major focus of animal welfare advocates as the cattle industry enters a potentially record-breaking year. Australia has the world’s most stringent live export regulations. Australian exporters must meet Exporter Supply Chain Assurance System (ESCAS) requirements for all existing and new live export markets. ESCAS requires exporters to take responsibility for the welfare of animals throughout their supply chain, from the farm to slaughter. Before an export company is granted permission to ship livestock overseas for slaughter, it must demonstrate livestock will be treated at, or better than, internationally recognised animal welfare standards. Australia exports livestock to over 60 countries and in 2013 exported 2.89 million livestock valued at A$935 million.

\(^{14}\) Roy Morgan Research
\(^{15}\) National Retail Federation
Treatment of sporting animals before, during and after their racing career is again under the spotlight following high profile animal welfare campaigns. The Australian Racing Board has introduced national regulations to capture enhanced information on thoroughbred racehorses’ transition to a life after racing. Efforts to re-home ex-racehorses continue through programs such as Victoria’s Off the Track and the NSW Thoroughbred Rehabilitation Trust. Greater emphasis on selective breeding has also resulted in a 23 per cent reduction in the number of foals born over the last 10 years, while the number of horses raced has remained the same.

Greyhound racing clubs throughout Australia have set up programs to encourage adoption of ex-racing dogs as family pets. Greyhounds Australasia announced its endorsement of a National Welfare Strategy in May 2014. Requirements include formal training for trainers and breeders.

Many sectors risk their social license due to the lack of factual information independently available to the media, consumers and policy makers. Activists, be they concerned with animal welfare, environmental sustainability, or ethical behaviour, continue to possess far superior abilities in the use of social media, organising campaigns and managing the political process.

BIOSECURITY

In 2013 - 2014, Australia’s biosecurity system assessed and cleared more than 17 million international passengers, 180 million international mail articles and 17,000 international sea vessels. With an increasing focus on trade with the Asian region, and greater human travel into Australia, the pressure on retaining the country’s biosecurity status will only continue to increase.

On 27 November 2014, the Australian Government introduced the Biosecurity Bill 2014 which is designed to support the biosecurity system in any age, regardless of advances in transport and technology or future challenges. Several years in the making, it will replace the century-old Quarantine Act which although amended 50 times in response to changing risks, had become cumbersome to administer and difficult to interpret.

Australia is free of many pests and diseases common around the world. It underpins the nation’s world-class reputation as a high quality, reliable producer backed by labelling systems, traceability and food safety standards second to none. In a growing and highly competitive global market for primary produce, Australia’s ‘pest and disease free’ status will increase in importance.

While ABARES estimates revenue losses from a large multistate foot-and-mouth disease outbreak would be more than $12 billion in the first year alone, it believes the economic impact of trade restrictions, including the closure of export markets, would be far greater than the cost of controlling the disease. The Bill contains new powers that:

- Allow for the management of a wider range of pests and diseases already present in Australia;
- Manage the risk to Australia’s marine industries from invasive marine pests found in ballast water and sediment held on board domestic and international ships;
- Enable biosecurity risk to be assessed within a specific area or region as well as for Australia as a whole;
- Help to protect Australia’s natural environments by ensuring ‘biosecurity risk’ also considers the risk to the environment;
- Allow businesses to enter into a single arrangement with the Department of Agriculture to manage their biosecurity risks in an approved way.

Specialists in areas crucial to biosecurity management are declining (taxonomists, plant pathologists and entomologists). With fewer people training in taxonomy, CSIRO estimates that 50 per cent of Australia’s diagnostics capability will be lost by 2028[^16].

[^16]: CSIRO 2014, Australia’s Biosecurity Future: preparing for future biological challenges
GLOBAL FOOD TRENDS

Food trends are typically driven by consumers’ broader lifestyle trends which heading into 2015 can be characterised as an even stronger and more widespread focus on health and wellbeing (Figure 7); empowerment and knowledge; personalisation and convenience of product. Predictions for what this means in the food industry include:

+ Demand for transparency in food labelling and clear definitions for ‘natural’ or ‘nutritious’ food;
+ Increasing demand for new flavours, more unusual fresh and nutritionally enhanced ‘superfoods’ as the interest in nutrition converges with the popularity of reality television cooking shows;
+ Growing importance of provenance and transparency for the Millennial generation (15 – 35 years) who are tech-savvy, experience-driven and less brand loyal than older consumers;
+ Declining importance of formal meal times as a result of non-traditional work patterns and changing family structures. As a consequence, quick healthy ‘grab and go’ foods are a burgeoning market;
+ Repositioning and value-adding of traditional frozen foods (seafood and vegetables) to emphasise their superior nutritional content;
+ Greater importance of minimizing waste and preventing over-consumption – both in food and packaging;
+ Growing focus on healthier food options within Asia’s middle-class and products that have reduced sugar, salt and fat, and are allergen free;
+ Changing Western attitudes towards alternative protein and mineral sources, for example, insects.

The online shopping revolution of the past fifteen years has finally reached the point where it is starting to have an impact on food retailing in Australia. Aussie Farmers Direct was established in 2005 and has been the fastest growing franchise business in Australia for the past three years. Non-traditional players are also eyeing off what is seen to be an untapped market - AmazonFresh is the online grocery service of Amazon.com and has already become a dominant player in the US online grocery market with 40 per cent of e-grocery shoppers preferring AmazonFresh over other online grocery retailers.

URBAN GREENING

Research showing the positive effects of landscaping on reducing air temperatures, conserving energy and even improving health is creating a new breed of horticultural experts specialising in areas of government policy, research and design. Urban green infrastructure is a global trend leading to rapidly increasing demand for living walls/vertical gardens, sophisticated rooftop gardens and sustainable open public spaces.

Urban residents, particularly in apartment living are unwilling to compromise access to a green environment and developers understand they can achieve an additional 10 per cent premium where green infrastructure is an integral component of any building design. While retro fitting is common, more and more apartments are having these features designed into the plans of new buildings. In 2014, One Central Park in Sydney won the ‘International Green Infrastructure Award’ for its vertical garden, the largest of its kind in the world which features 35,000 irrigated plants cascading down 1100 square metres of the building’s exterior. Australia remains the fourth most urbanised nation on the planet with over 89 per cent of Australia’s population living in urban areas.

FIGURE 7. STRENGTHENING CONSUMER FOCUS AND VALUE PLACED ON HEALTH AND WELL-BEING

WE ARE WHAT WE EAT

People changing diet to lose weight by region (% respondents)

<table>
<thead>
<tr>
<th>Region</th>
<th>% Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>North America</td>
<td>83</td>
</tr>
<tr>
<td>Europe</td>
<td>78</td>
</tr>
<tr>
<td>Global average</td>
<td>75</td>
</tr>
<tr>
<td>Latin America</td>
<td>75</td>
</tr>
<tr>
<td>Asia-Pacific</td>
<td>71</td>
</tr>
<tr>
<td>Middle East/Africa</td>
<td>68</td>
</tr>
</tbody>
</table>

People very willing to pay a premium for each attribute (% respondents)

<table>
<thead>
<tr>
<th>Attribute</th>
<th>% Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>All natural</td>
<td>39</td>
</tr>
<tr>
<td>No artificial flavours</td>
<td>31</td>
</tr>
<tr>
<td>Gluten-free</td>
<td>23</td>
</tr>
<tr>
<td>High in fibre</td>
<td>29</td>
</tr>
<tr>
<td>Sustainable/ fair trade</td>
<td>30</td>
</tr>
<tr>
<td>Organic</td>
<td>33</td>
</tr>
</tbody>
</table>

Source: Nielsen Global Health & Wellness Survey
NEW FRONTIERS

Defined as the parts of Australia that sit north of the Tropic of Capricorn and which span Western Australia, Northern Territory and Queensland, the area termed Northern Australia is often regarded as Australia’s ‘last frontier’. Spanning three million square kilometres and home to just over one million people, its development is now a major focus of governments.

The north is already home to pastoral, agricultural, fisheries and aquaculture sectors. CSIRO suggests that 5 to 17 million additional hectares across Northern Australia are potentially suitable for a variety of agricultural purposes based on their arable soil, including cotton, sugarcane and wheat. Australia’s total area of irrigated land currently in use for agriculture is two million hectares. CSIRO also suggests that significant opportunities exist for large scale, saltwater pond aquaculture.

To ensure the widest range of crops can be sustainably grown, Australia’s world-leading soil science and water management technology will be paramount given the varying soil quality across the North.

A White Paper on Developing Northern Australia is now under development following consultation on the Green Paper during 2014. The final paper will include opportunities for further development of the region’s agriculture industry, and policy to manage impediments to growth including access to skills and participation of Indigenous people.

Informing the process has been the work of the Joint Select Committee on Northern Australia and its final report ‘Pivot North: Inquiry into the Development of Northern Australia’. The Committee suggests ‘that the Australian Government, in conjunction with the Queensland Government, investigate the construction of an abattoir in North Queensland with a view to facilitating private sector investment at the earliest possible date’.

SHARPENED POLICY FOCUS

As the Australian economy adjusts to declining mining investment, the big challenge is to rebalance the economy and find the new drivers of growth. The Australian Government has committed to a more diverse, world class ‘five pillar’ economy which focusses on the nation’s comparative advantage and strengths in agricultural exports, advanced services, manufacturing innovation, education and research and mining exports.

The White Paper on Agricultural Competitiveness will look at ways to boost investment and jobs growth in the sector and associated regional areas; the efficiency and competitiveness of inputs such as skills, training, education and human capital; and the effectiveness and economic benefits of existing incentives for investment and jobs creation in the agriculture sector. Submissions to the Green Paper closed in December 2014.

Commentators expect the White Paper to be released in the first half of 2015 and that it will complement related initiatives, including the Action Plan to Boost Productivity and Reduce Regulation, the White Paper on Developing Northern Australia and the Energy White Paper.

State governments have also sharpened their focus on the policy front with agrifood sectors viewed as critical to growth and local export:

- **New South Wales**
  + Agriculture Industry Action Plan – Primed for growth: Investing locally, connecting globally

- **Northern Territory**
  + NT Department of Primary Industries and Fisheries – Industry Development Plan 2013 - 2017

- **Queensland**
  + Queensland’s agriculture strategy – A 2040 vision to double agricultural production
  + Queensland Production Horticulture Workforce Development Plan
  + Great Sandy Regional Marine Aquaculture Plan
  + Beef Industry Action Plan (under development)

- **South Australia**
  + SA Food Strategy 2010 – 2015
  + SA Seafood Industry Food Plan 2010 - 2015
  + South Australian River Murray Sustainability Program (SARMS)

- **Tasmania**
  + AgriVision 2050

- **Victoria**
  + Food to Asia Action Plan

- **Western Australia**
  + Agrifood 2025+
LABOUR SUPPLY

Australia's domestic labour supply does not meet all of agrifood's needs due to labour mobility inertia, the regional and remote location of most sectors, the seasonal and temporary nature of work, and in some instances, the harsh working conditions.

Over time, automation and technology will replace many of the repetitive and low skilled jobs but in the near term, and particularly in small to medium sized businesses and in sectors such as horticulture, the need for foreign labour is likely to continue.

Sectors and individual enterprises are calling for urgent changes to improve flexibility and reduce compliance burden of existing visa programmes by:

+ expanding the Working Holiday Maker (417) visa by increasing the qualifying age, expanding the country coverage and allowing a second application;
+ broadening the skill coverage of the Temporary Work (Skilled) visa (subclass 457);
+ expanding the Seasonal Worker Program (SWP) to all agricultural industries and extending participating countries to include Vietnam, Cambodia, Malaysia and Thailand;
+ streamlining visa application processes to reduce administrative burdens [shorter application waiting periods, less onerous superannuation requirements and automatic provision of tax file numbers]; and
+ providing clearer pathways to residency for visa holders in farm management.

Securing a more flexible, broader based SWP is of paramount importance to horticultural sectors in the Northern Territory where the lack of casual local labour directly impacts on the ability of businesses to harvest when needed.

There are strong and sustained calls for the list of participating countries to be expanded to include South East Asian nations (see above) where workers are pre-acclimatised to humid, hot conditions, possess a good work ethic and are rarely affected by Mango sap (which can cause fair-skinned backpackers a debilitating skin allergy).

Countries currently participating in the SWP are Kiribati, Nauru, Papua New Guinea, Samoa, Tonga, Solomon Islands, Tuvalu, Vanuatu and Timor Leste. Developing skills is an important feature of the Seasonal Worker Program. ‘Add-on Skills Training’ for those in the program is now available at no cost to the employer of workers in areas such as information technology, English literacy and numeracy, and first aid is now available and allows seasonal workers to access basic training to increase their performance.

CONTESTABLE RESOURCES

Agrifood productivity relies on soil integrity, pollution free air, clean water and oceans. As custodians of 59 per cent of Australia’s landmass and the third largest ocean estate in the world, industry is under constant scrutiny from competing business interests, environmental advocates and a burgeoning urban population.

HYDRAULIC FRACTURING

As the world looks to harvest new and diverse energy sources, advances in technology mean that the fracking industry can tap into shale rock formations previously considered uneconomical to exploit. Hydraulic fracturing, known as ‘fracking’ involves injecting a mixture of water, sand and chemicals into wells at high pressure to crack dense rock and release the oil, natural gas and natural gas liquids.

As consumers become increasingly vigilant about what they eat and how it is produced, there are growing concerns in Australia and internationally that groundwater is being contaminated and flowing into the food chain. As a water-intensive process, there are also concerns over its use of increasingly scarce fresh water sources.

Australia has large reserves of coal seam gas, especially in Queensland, New South Wales and Victoria, while large shale gas deposits exist across the Northern Territory, South Australia and Western Australia.

MURRAY DARLING BASIN PLAN

The Murray Darling Basin covers 14 per cent of Australia’s territory or 1.06 million km² and stretches across Queensland, New South Wales, Victoria and South Australia. Home to 2.1 million people, it supports 39 per cent of Australia’s agricultural production, one-third of which is irrigated.
The landmark Murray-Darling Basin Plan aims to restore environmental health to the river system by rebalancing water use between farms, cities and ecosystems. The Plan’s target is to return 2,750 billion litres of surface water to the river system each year by 2019 (equating to about 13 percent of the Murray’s average annual flow).

The Murray Darling Basin Authority’s impact assessment found that the overall impact of the Basin Plan is ‘expected to be modest’ but that ‘some communities will likely be relatively more vulnerable to impacts’. The most vulnerable regions were cited as the cotton growing areas of the Lower Balonne; rice growing areas of the Murrumbidgee and NSW Murray; smaller dairying communities in northern Victoria; and horticultural communities in Sunraysia and the South Australian Riverland.

Separation of water from land titles will fundamentally change local business models. In addition to long-running economic, demographic and social change already underway across Basin communities, successful implementation of the Basin Plan will demand local communities hold world-class capabilities in ‘water productivity’ such as water trading, water resource planning, environmental watering, water quality and salinity management, nutrient run-off, monitoring and evaluation.

MARINE RESERVES REVIEW

Australia has the largest system of Marine Reserves of any nation in the world. At 3.1 million square kilometres, it represents around a third of Commonwealth waters and comprises 60 Marine Reserves. The Commonwealth’s Marine Reserves Review is underway following the setting aside of the management plans that were scheduled to come into effect in July 2014. The Review will deliver new management plans to ‘protect marine ecosystems and recognise the important role played by many industries, communities and recreational fishers in ensuring our oceans remain healthy’. The review is being conducted by six expert panels which are due to report to Government by mid-2015.

‘Agrifood faces many challenges in attracting, retaining and developing a highly skilled workforce. Most of these issues are common across sectors, only the industry context is different.

Dairy is widely recognised as a progressive sector in the area of ‘people and capability’. From working with primary schools to build children’s knowledge of the industry, right through to helping owners step back from their business, Dairy Australia has developed a wide range of highly successful initiatives that make a real difference for individual enterprises and the industry as a whole. Most of these programs have high levels of transferability to other sectors. The following case study profiles a number of Dairy Australia’s initiatives with a view to encouraging their adoption by a range of agrifood sectors.’
**Case study: Dairy Australia – building capability at every level**

Dairy Australia is the industry-owned national services body for the dairy industry. Formed in 2003 its role is to help dairy farmers adapt to a changing operating environment and build a profitable, sustainable and globally competitive industry. Together with the farmer-paid levy, the company receives matching Federal Government research and development funds, and acts as the ‘investment arm’ of the industry, driving projects that can’t be done efficiently by individual farmers or companies.

One of Dairy Australia’s three strategic priorities is to grow skills and capability within the dairy industry. Its dedicated ‘People and Capability’ team delivers innovative products and services in response to the full spectrum of challenges – attraction, retention, education and transition. The team also works across the supply chain with farmers, processors and the service sector.

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**Cows Create Careers** is a widely acclaimed initiative that commenced in 2004 and continues to grow in reach and impact. Targeting secondary schools, three separate modules give schools and students an introduction to the dairy industry with the major objective being to create awareness of careers and pathways on offer.

A full program handbook is provided with students working in teams of 4-5 to complete assessment tasks. Dairy farmers deliver two cafes for a 3 week period to the school and an industry advocate visits to talk about their career pathway. At the end of the program, students and teachers attend a presentation and awards ceremony. Projects also go to experience significant print, radio and television media coverage.

Since its inception, nearly 52,000 students and over 200 schools have participated across 23 dairy regions. Over 360 dairy farms and one of three dairy related themes – Unbeatable Bones, Fuel for Life or Farm to Plate. Schools also complete a class learning journal that documents student learnings from start to finish. A winning school is selected from each participating region and awarded a cash prize.

The program reflects the Australian curriculum. Supports a selection of resources for teachers, the program is highly interactive, motivational and caters for many different learning styles.

To the end of 2013, Picasso Cows has been run in over 500 schools, reaching over 80,000 students across Australia. Picasso Cows is a free curriculum program that encourages teachers to educate primary school-aged children about the Australian dairy industry. Schools are given a blank, life size fibre glass cow to design and paint in one of three dairy related themes – Unbeatable Bones, Fuel for Life or Farm to Plate. Schools also complete a class learning journal that documents student learnings from start to finish. A winning school is selected from each participating region and awarded a cash prize.

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**The Dairy Manufacturing Scholarship** program attracts passionate new graduates and diploma holders into the industry from a range of disciplines by giving them intensive, hands-on experience in relevant aspects of dairy manufacturing. Graduates come from a wide range of fields including science, agriculture, engineering, nutrition, food science and technology. The nine week program includes four weeks of theory and practical training and five weeks of industry placement with 8-10 manufacturers. While the program does not guarantee employment, all 2014 graduates were employed within industry within a few weeks of completion. Since its inception in 2006, the scholarship has trained almost 5,000 students.

Young Dairy Network Australia works with existing regional groups to establish a national network of young farmers (18-40s). At its most elemental, the Network connects local farmers and shares information with a goal of building the expertise of the industry. Managed by Dairy Australia, the program connects the local regional network with similar groups across the country, shares information, swaps ideas and organizes seminars, farm walks, leadership programs and social events. It also supports attendance at national conferences and connecting individuals with industry experts.

The Diploma of Human Resource Management (Dairy) is a 1 year course led by experienced and qualified dairy people advising dairy farmers on human resource management (HRM) decisions or people responsible for HRM on a large dairy farm. The Diploma gives students a theoretical and practical foundation in dairy recruitment, analysis of roles and responsibilities, employment, payroll and industrial relations, policies and procedures, management of working conditions, remuneration, and employee benefits, induction processes, separation/termination procedures, training and development pathways, succession planning and occupational health and safety.

**Industry webinars** and on-line tutorials are a key mechanism in connecting dairy manufacturers directly with the global technical expertise available. With manufacturers scattered across a vast geographic area, trial and face to face workshops are not always suitable. By comparison, webinars are a cost-effective and efficient way to transfer knowledge and skills to staff without disrupting production schedules. Nine webinars ran in the 2011/12 pilot year, 25 in 2012/13 and 33 sessions in 2013/14. Attendance has increased significantly to 40 to 60 participants per webinar. A typical webinar runs for 60 to 90 minutes and is presented by industry experts from Australia, New Zealand, USA and Europe.

The Employment Starter Kit initiative (ESKI) is a highly successful resource that gives farmers easy access to the information and documents an employer needs when they employ someone. With many farms converting and becoming larger, family owned operations are starting to employ people for the first time. Available in hard copy or download from the kit, includes advice and tools on the law, employing someone; payroll and leave; Individual Flexibility Agreements and the Pastoral Award termination and safety. Dairy Australia supported farmer steering committees to develop, pilot and validate the ESKI. Since its launch in 2013, over 1,300 ESKI folders have been distributed to farmers with around 2,000 ESKI related downloads each month. ESKI is registered to ensure farmers receive updates and relevant information. Annual user survey findings indicate 90 percent of respondents have used their ESKI and 86% believe it has helped them improve their employment practices.

**National Centre for Dairy Education (NCDE)** is the dairy industry’s preferred training provider. What started as a partnership between Dairy Australia and Goulburn Ovens Institute of TAFE (GOTAFE) is now a national network of Registered Training Organisations that enables a presence within each dairy region in Australia. NCDE offers nationally endorsed qualifications, school based apprenticeships, traineeships and a wide range of short programs on key industry issues e.g. in Farm Management, Dairy Farmers are delivered the ‘Developing Dairy Leaders Program’. NCDE providers include: TAFE NSW and Tocal College; TAFE SA; Great Southern Institute of Technology; Queensland Agricultural Training Colleges; Goulburn Ovens Institute of TAFE, and TasTAFE.

**The Developing Dairy Leaders Program (DDLP)** recognises that good leadership is critical to the industry’s future success and that in any given year there are approximately 200 leadership roles at a national, state and local level. These include State Dairy Farmer Organisations, Regional Development Program boards and industry reference groups. Participants learn how to articulate, present and debate ideas, how to advocate, participate as a member of a board, participate in a media interview, lead and manage community or industry organisations and manage workplace stories. The second phase of the program involves a regionally based project with the support of an industry leader mentor, and concludes with a four-day residential in Canberra on advocacy and national policy development.

**Step Up** provides information and tools for farmers looking to take the step from being an employee to self-employment. **Step Back** supports farm owners looking to reduce their active involvement on farm.

**Stepping Stones** is one of three initiatives aimed at supporting people transitioning into and through the dairy industry. **Stepping Stones - Career Planning** is a guide to the different types of careers and career opportunities in the dairy industry. It provides information on how to start a career or for experienced people who want to progress their dairy career further and covers farm trainees, operators, managers and sharefarmers. **Stepping Up** provides information and tools for farmers looking to take the step from being an employee to self-employment. **Step Back** supports farm owners looking to reduce their active involvement on farm.

**Dairy** is Australia’s third largest rural sector. In 2013/14 it achieved a farmgate value of $4.7 billion and exported to over 100 countries to the value of $2.7 billion. Approximately 43,000 people are directly employed on dairy farms and within dairy companies. Several factors are converging to create an unprecedented need to focus on the attraction, retention and development of a skilled workforce. On average 17 per cent of people leave the industry each year, a further 17 per cent go to other farms. As businesses continue to consolidate, more farmers are finding themselves employing staff for the first time. Simultaneously, businesses are needing to build capability in response to a more volatile and complex environment.
**LATEST INDUSTRY INTELLIGENCE**

**TOP 5 MARKET FACTORS**

**VET REFORM AGENDA**

Launched on 14 October 2014, the Government’s Industry, Innovation and Competitiveness Agenda has four overarching ambitions, namely:

+ A lower cost, business friendly environment with less regulation, lower taxes and more competitive markets
+ Better economic infrastructure
+ Industry policy that fosters innovation and entrepreneurship
+ A more skilled and flexible labour force.

Key initiatives under the Agenda include the reform of the Vocational Education and Training (VET) sector which has been underway throughout 2014 and will continue into 2015. Initiatives to date include:

+ Launch of the Industry Skills Fund (Food and Agribusiness are a priority industry)
+ Introduction of new Standards for Registered Training Organisations and regulators
+ Finalisation of arrangements for the Unique Student Identifier
+ Introduction of the Trade Support Loans Programme.

Reforms still underway include:

+ Establishment of the Australian Industry and Skills Committee
+ Delegation of regulatory responsibility to high-performing Registered Training Organisations
+ Review of Training Packages and accredited courses
+ Implementation of a contestable model for the development of Training Packages
+ Implementation of the new Australian Apprenticeship Support Network
+ Trialling of ‘Training for Employment Scholarships’ for unemployed youth in regional Australia.

**STUDENT ENTITLEMENT**

Major reform to the funding model of the VET system continues to flow as a result of the 2012 National Partnership Agreement on Skills Reform which commits $1.75 billion (2012-2017). A major component of the Agreement is the National Training Entitlement, which shifts the training market from that which is centrally planned and funded by governments – a supply driven system – to one where learners’ requirements drive demand.

The National Training Entitlement provides all working age Australians without a Certificate III or higher qualification with access to a government subsidised training place. How student entitlement is implemented does, however, vary considerably across jurisdictions in terms of eligible (priority rating) qualifications, student contribution levels, eligible Registered Training Organisations [RTOs] and branding:

+ Australian Capital Territory – Skilled Capital
+ New South Wales – Smart and Skilled
+ Northern Territory – NT Training Entitlement
+ Queensland - Certificate 3 Guarantee
+ South Australia - Skills For All
+ Tasmania – Career Start
+ Victoria – The Victorian Training Guarantee
+ Western Australia – Future Skills WA

As a consequence of entitlement, VET funding is becoming far more competitive. Since the 2008 introduction of entitlement in Victoria, TAFE market share of government funded student load has fallen from almost 70 per cent to 45 per cent. In South Australia TAFE market share has fallen from 71 per cent in 2011 to 51 per cent in 2012. However, loss of market share does not necessarily mean lower enrolments; in both states TAFE enrolments grew as the system expanded.

Since the introduction of student entitlement by Victoria and South Australia, enrolments in AgriFood Training Package qualifications have increased by 21.9 per cent and 15.1 per cent respectively.

The affordability of qualifications not funded through the student entitlement model is a growing concern for agrifood sectors, particularly those where entry level wages are relatively low and employers are already struggling to attract prospective employees.
QUALIFICATION DESIGN

SKILL SETS

Emerging technologies, changing business models and new market access requirements are just some of the factors driving an unprecedented rate of change across agrifood sectors. The speed and enormity of change is leaving many workers to play ‘catch up’ in their job roles and many enterprises without the skills base they need to take advantage of emerging opportunities.

The need for Skill Sets remains the single most commonly voiced issue by industry, and the lack of funding for Skill Sets is cited by training providers as a frequent blockage to meeting enterprise needs. To be clear, industry is not proposing that Skill Sets be delivered at the expense of full qualifications, simply that Skill Sets form an equally valued and funded pathway within all jurisdictions.

The majority of agrifood sectors have a long standing culture and preference for learning that is incremental, socially embedded and occurs throughout a working life. In part this is due to the history of on-farm extension services and the need for the business to internalise the benefits of training immediately if time away from work is to be justified. It is also because the remote, regional and small business nature of many operations means full qualifications are neither convenient nor readily delivered. In an information-rich, digital environment, formal training and the system’s policy framework are significantly lagging behind the evolving world of informal learning and clients’ expectations around ‘microlearning’.

Job pathways can be vertical, horizontal or tangential and involve a ‘building block’ approach to gaining a portfolio of skills. Short courses in cross-industry skills are of high value to regional workers and help to establish a local, adaptive workforce that can transition between sectors and companies as the seasons dictate, and importantly ensure workers remain living in the region long term. Highly valued cross-industry skills include: forklift driving; first aid; chemical handling; food safety; and workplace health and safety.

The current National Agreement for Skills and Workforce Development commits the Commonwealth and State and Territory Governments to halving the proportion of 20-64 year olds without qualifications at Certificate III level or above. While this is one of the main drivers behind the introduction of the National Student Entitlement, these targets have also shaped policy and funding priorities across the jurisdictions since 2008 and reinforce the ‘full qualification’ orientation of the system.

Introduction of the Unique Student Identifier on 1 January 2015 should remove practical impediments to funding Skill Sets and the acquisition of individual units of competency given that it enables students to hold an authoritative record of their incremental learning and as it accrues, making it straightforward for RTOs to award full qualifications.

Launched in January 2015, the Industry Skills Fund will help with the cost of training for Skill Sets. ‘Food and Agribusiness’ is considered a priority industry under the Program Guidelines, although training to comply with legislative or other regulatory requirements will not be funded.

FLEXIBILITY VERSUS SPECIFICITY

Divergent views on qualification design continue to be voiced by training providers. The specificity within units of competency is a point of tension for some who claim they can be too specific for a local employer and that the RTO risks non-compliance if they do not faithfully adhere to the Training Package. Some training providers believe the opposite, that units of competency are insufficiently detailed and too open to interpretation to the point where the integrity of the qualification is lost.

In part, the diversity of views reflect the different expectations consumers hold. Some seek a qualification that mirrors an established job in which the learner is already employed, others seek a qualification that prepares a person to work in the occupation in a broad sense so that their skills are portable between employers.

The Review of Training Packages and Accredited Courses under way as part of the VET Reform Agenda is exploring whether changes need to be made to the current design to manage these expectations.

TRANSPARENCY OF RTO PERFORMANCE

Industry continue to voice strong concerns over the inconsistent, sometimes poor quality of training and assessment outcomes. Overly shortened training, inappropriate delivery modes and qualifications narrowed by training provider’s internal decision-making are commonly cited complaints. An increasing number of sectors and industry bodies are now developing ‘approved lists’ of training providers in a bid to safeguard their members. When surveyed, 42 per cent of industry respondents and 33 per cent of RTOs considered the VET system to be a ‘hit and miss’ experience.

Industry are highly critical of the lack of transparency that exists around individual RTO performance, particularly given the calls for industry to raise its level of investment in skills development and that over 4,600 RTOs now operate in an increasingly contested open market. These concerns are further validated by the Australian Skills Quality Authority’s report into Marketing and Advertising Practices of Australia’s Registered Training Organisations, which found that up to 45 per cent of RTOs it investigated were marketing and advertising using misleading information.

There are views that genuine transparency of RTO performance would ensure true market forces (informed consumers), eliminate poor quality RTOs and reduce the onus of regulation to improve quality. Transparency would also reward and recognise high quality RTOs by ensuring they are well known to prospective learners and enterprises.

In October 2014, the Victorian Government launched ‘Rate your training’ website (www.rateyourtraining.com.au). Using a simple 5-star rating system, employers can rate the training they or their employees have received against 15 industry-tested criteria (used previously by the Institute for Trade Skills Excellence).
While all RTOs that have scope to deliver publicly available courses in Victoria are included, training providers can choose to opt out.

The Australian Government, states and territories have launched a National VET Complaints Hotline to streamline and simplify the reporting of complaints for VET users. Students and the general public will be able to use the Hotline to raise concerns – anonymously, if desired – about training practices.

QUALITY OF OUTCOMES

Australian industry has expectations of access to high quality and affordable training. While transparency of performance is a fundamental issue for industry, training providers have registered strong concerns about three separate factors which impact on their ability to deliver high quality training and assessment.

FUNDING

While spending on schools and universities has risen significantly over the last decade, there has been a much lower rate of growth in VET spending. Total expenditure grew 15 per cent for VET over the ten years to 2012–13, while schools and higher education experienced growth of 23 and 40 per cent respectively over the same period. Expenditure on VET amongst the states and territories is uneven. In Victoria, expenditure on VET grew at an average of 4.2 per cent per year over the ten years to 2012–13, whereas New South Wales and Queensland averaged zero and negative growth respectively over the same period17. Total operating revenue of the VET sector in 2013 was 8519.1 million.

Training providers have expressed strong concerns about the decline in relative spending on each hour of training that has occurred over the past decade (Figure 8). In higher education, expenditure per student has been relatively stable, while spending per student in government secondary and primary schools has increased 20 per cent and 30 per cent respectively. Meanwhile expenditure per hour of training in VET actually decreased around 25 per cent over the same period.

AUDIT AND COMPLIANCE

Establishment of an open training market has resulted in a greater emphasis on regulation and audit. Over 66 per cent of RTO survey respondents consider audit and compliance requirements ‘negatively impact’ on their ability to meet the needs of industry. Examples cited include trainers spending a disproportionate amount of time on evidence gathering and record keeping rather than actual training, and how ‘audit and compliance’ staff within training providers were growing in number but without commensurate growth to the business. Inconsistent approaches to the audit process by auditors was a commonly cited concern with claims that trainers’ uncertainty was stifling innovation and flexibility.

Release of the independent ASQA Process Review: Final Report on 25 June 2014, has triggered a number of changes with the objective of establishing a more contemporary approach to the regulation of VET. These include the introduction of earned autonomy for high-performing training providers; removal of financial viability risk assessment for re-registering RTOs; and automatic updates of equivalent qualifications and units of competency for RTOs already registered to deliver those products.

The Australian Skills Quality Authority is also taking on an educative role and will provide RTOs with information and guidance to support the introduction of the Standards for Registered Training Organisations 2015.

SHORTAGES OF QUALIFIED TRAINERS AND ASSESSORS

VET trainers and assessors are ‘dual professionals’ and need to hold both industry currency and educational capabilities. With shortages of skilled labour already being experienced in several industry sectors, it is not surprising that over 64 per cent of respondents to the RTO survey stated that they find it ‘difficult’ to recruit ‘appropriately skilled assessors and trainers’. A further 11 per cent found it ‘extremely difficult’. Recruitment difficulties exist across many teaching fields, the greatest shortages identified as being within:

- Horticulture, especially production horticulture
- Agriculture
- Arboriculture
- Veterinary nursing and animal care
- Landscaping

17 Mitchell Institute 2014, Expenditure on education and training in Australia
VISION
A GLOBALLY COMPETITIVE, PROFITABLE AND SUSTAINABLE AGRIFOOD INDUSTRY BUILT ON WORLD CLASS SKILLS, BUSINESS EXCELLENCE, TECHNOLOGY AND INNOVATION

FACTORS SHAPING THE ENVIRONMENT

Top 5 Macro Factors
1. Global demography
2. Planet fundamentals
3. Shifting economic forces
4. Connected world
5. Disruptive technologies

Top 10 Micro Factors
1. Consolidation and bifurcation
2. Retail concentration
3. Animal welfare
4. Biosecurity
5. Global food trends
6. Urban greening
7. New frontiers
8. Shaped policy focus
9. Labour supply
10. Contestable resources

INDUSTRY PRIORITIES

KEY STRATEGIES FOR ACTION BY INDUSTRY, GOVERNMENTS AND TERTIARY SYSTEM

1. Consolidation and bifurcation
2. Retail concentration
3. Animal welfare
4. Biosecurity
5. Global food trends

Attracting motivated, smart and adaptive workers

Build employers’ business management capability, innovation capacity, export readiness and cultural competence through Skill Sets and undergrad programs developed by collaborative VET/ higher education/ service provider partnerships

Build higher level skills within the workforce through delivery of Skill Sets, units of competency and full qualifications

Increasing enterprise’s capability to innovate, adopt new technologies and apply research outcomes

Continuously improve nationally endorsed qualifications and Skill Sets to meet industry’s emerging skills and knowledge requirements

Develop, brand and promote opportunities for the formal recognition of agrifood workers’ skills

Build world-class business skills and risk management capability

Build employers’ workforce planning capabilities in effective job design, work organisation and ‘employer of choice’ practices

Building higher level knowledge and skills within the existing workforce

Increase language, literacy, numeracy and digital literacy capabilities of the existing workforce as a platform for further skills development

Harmonise nationally endorsed qualifications with key industry certification/licensing requirements

Establish a national network of regional ‘skills ecosystems’ to build a highly adaptive local workforce

Retaining the best and brightest workers

Develop innovative responses to the skill needs of casual, contract and seasonal workers

Establish and promote skill based career pathways for existing workers within and across agrifood sectors

ENABLING POLICY

Enabling policy required from governments to meet industry’s needs:
1. Funding of Skill Sets and individual units of competency to meet the incremental learning needs of individual enterprises and learners
2. A transparent training market where individual RTO performance against agreed performance measures is made publicly available online
3. A more flexible, responsive and broader based Seasonal Worker Program which increases the coverage of participating countries and eligible industry sectors
4. Restoration of universal incentives to Certificate II traineeships in key entry level occupations
5. Review and update ANZSCO classifications to reflect new and emerging job roles and changing skill levels

RESEARCH PRIORITIES

Priority research required to inform key strategies:
A. Analysis of the 2030 workforce as a result of new technologies, demographic and social change (emerging and evolving job roles, implications for work organisation and skills development)
B. Piloting and evaluation of VET system/ publicly funded research collaborative models for training delivery/ extension which expose students to new knowledge and practices
C. Development and validation of a modern, flexible employment based training model including its attributes, likely job roles and critical success factors that would be attractive to both agrifood employers and potential employees in a wide range of sectors
D. Development of a national brand strategy for agrifood careers which includes agreed brand attributes and value proposition which can be contextualised and adopted across agrifood sectors
E. Utilisation of the 2018 census to establish existing workforce numbers and existing skills base within the agrifood supply chain and across permanent, casual, contract and seasonal workers

SCAN ON A PAGE
SECTION 2
IDENTIFIED WORKFORCE DEVELOPMENT NEEDS

INDUSTRY PRIORITIES

Australia’s VET sector has a major role to play in transforming agrifood into a globally competitive, profitable and sustainable industry.

The opportunities that sit before industry are spectacular but far from a foregone conclusion. Without a determined and sustained response to what is an unprecedented skills challenge, few companies will be in a position to reap the benefit.

With unprecedented clarity, industry has confirmed and refined its skill development priorities for 2015 and beyond throughout the consultation process for the Environmental Scan, which are:

1. Building world-class business skills and risk management capability
2. Attracting smart, motivated and adaptive workers
3. Building higher level knowledge and skills within the existing workforce
4. Increasing enterprise’s capability to innovate, adopt new technologies and apply research outcomes
5. Retaining the best and brightest workers.

Delivering on these priorities requires expertise and resources which sit beyond the realm of any single party. It will involve industry, governments, communities and the VET sector working in a sustained partnership, with a clear vision and clearly differentiated roles. It will require unparalleled industry leadership and collaboration between sectors; VET policy that respects and responds to regional Australia’s learning needs; and a VET sector where individual RTO performance is transparent and publicly available (See ‘Scan on a page 2015').

Industry’s five priorities are underpinned by the following strategies.

1. BUILDING WORLD-CLASS BUSINESS SKILLS AND RISK MANAGEMENT CAPABILITY

1.1 Build employers’ business management capability, risk management ability, export readiness and cultural competence through Skill Sets and undergrad programs developed by collaborative VET/ higher education/ service provider partnerships

In a survey18 of Asia Pacific agribusiness leaders, the top three strategic priorities for their respective companies were ‘acquisitions’, ‘international markets’ and ‘new products’. In the same survey, the most important capabilities for leaders were considered to be implementing change, effective leadership and strategic thinking. Many of those surveyed believed agribusiness talent has come a long way, however companies tend not to have the capabilities needed to seize the opportunities ahead and must do more to invest in their ‘employer brand’.

It is recommended that providers develop:
+ short programs based on non-degree structures to upskill existing managers and business owners, delivered in targeted blocks in response to industry’s incremental learning culture
+ contemporary degrees that reflect agrifood’s emerging markets and combine agrifood business management, innovation and product development, export and supply chain management, risk management and cultural competence
+ learning approaches and promotional strategies differentiated according to learner cohort and generation.

1.2 Build employers’ workforce planning capabilities in effective job design, work organisation and ‘employer of choice’ practices

Traditional employer/employee approaches to work organisation are reducing with companies increasingly seeking a flexible mix of consultants, interim employees (seasonal, casual), or contingent workers (contract, part-time, temporary). These new relationships require companies to manage workers in new ways.

Industry is the first to recognise that it must not simply become a ‘destination of choice’ for job seekers, but its businesses must also become ‘employers of choice’. Improved employment practices, job design, people development and work organisation are pre-requisites for several sectors if they are to attract smart, motivated and adaptive workers.

‘Employer of choice’ programs focus on building a positive culture within the business that results in stability, productivity growth and a highly motivated workforce. Global programs such as ‘Investors in People’ exist with high levels of formal recognition and brand awareness. Within Australia, informal programs and tools are available through state governments and industry bodies. Formal or informal, ‘employer of choice’ focuses on improving work organisation (team work and job design), human resource management practices (pay and incentives, appraisal, workforce development), employment relations, management and leadership (including strategic management, business development and line management).

18 Spencer Stuart, Leadership challenges for tomorrow’s agribusiness, October 2014
For an industry that needs to attract a new generation of smart workers and manage wide-ranging structural change, it is imperative that it move quickly to improve its reputation. It is recommended that a ‘whole of agrifood’ approach be taken through the development of a uniquely branded ‘employer of choice’ program run in conjunction with industry bodies.

2. ATTRACTING MOTIVATED, SMART AND ADAPTIVE WORKERS

2.1 Develop a national brand and common, contemporary narrative for agrifood careers for customisation by each sector

For several years, industry has been highly critical of the outdated and clichéd views of agrifood job roles that exist within the wider community. Many have attributed low tertiary enrolment numbers to a poor image and scant recognition of the variety of roles and pathways that exist across its many sectors and is actually one of industry’s strongest selling features given the desire of younger job seekers to have varied and interesting careers.

As a direct consequence, many sector specific careers websites have emerged and several broader websites now exist which offer resources and information spanning multiple agrifood sectors and related jobs. These include:

- Ausagventures – www.ausagventures.com - information on studying, training and careers in agriculture for secondary and tertiary students
- Career Harvest – www.careerharvest.com.au – extensive advice on the most cutting-edge careers in the food and fibre industry, pathways, internships and scholarships
- Primezone – www.primezone.edu.au – single-point access for teachers seeking primary industries education resources
- Rural Careers Guide – www.ruralcareers.net.au – combined resource for students, job seekers, counsellors and educators with career descriptions, interactive displays, education and training options to highlight career pathways
- Target 100 – www.target100.com.au – study guides on the sustainability of food production for primary school through to high school.

The $2 million Agriculture in Education program will also develop 60 five-minute online teacher support videos and a further 30 curriculum resources to help teachers and students better understand the products and processes associated with food and fibre production.

2.2 Build inspirational, broad based learning experiences for school students through the Australian Curriculum, VET in schools and industry placements

Exposing school students to the contemporary face of agrifood remains a priority for the majority of sectors yet too few employers are willing to provide work placements. Some see it as a potential risk in the workplace and others consider it an activity for which they are ill-equipped.

Work Inspiration is an Australian-wide, employer-led campaign that transforms student work experience into Work Inspiration. Based on the highly successful UK model, participating companies receive a range of free resources which can be tailored to each business, large or small, and take students through three ‘insightful’ experiences:

- All About Me – which discovers the talents, passions and interests of new recruits through a ‘personality quiz’ style conversation
- Behind the Scenes - presents an interactive outline of what the organisation does
- Careers Happen – enables students to interview staff members about their career journey, from their early teenage years up until now.

It is recommended that a formal mechanism be developed which enables schools to locate enterprises willing to provide structured workplace learning opportunities for VET in schools students – a need echoed by VET providers more broadly.
2.3 Establish and pilot a contemporary, flexible model for agrifood technician/para-professional cadetships in new and emerging job roles

Declining workforce numbers across most major sectors is largely a story driven by efficiencies:

+ Businesses shifting away from traditional employer/employee arrangements to a contracting and contingency based workforce
+ Mergers and acquisitions of individual businesses and as a consequence, reduced staff numbers
+ Replacement of repetitive tasks or whole job roles by automation and technology
+ An increase in the number of generic job roles in marketing, product development, engineering, and logistics which do not identify with ‘agrifood’ in Census data.

Employment trends that focus simply on industry’s contracting workforce is an unhelpful distraction and misses the real story: the growth of para-professional and technician job roles in response to the need for deeper knowledge and higher level skills in critical areas, such as, water management and irrigation, sustainable practice, precision agriculture, animal performance, breeding and nutrition.

Over six per cent of current agricultural technicians are 457 visa holders, the 10th highest user of that visa class in proportion to total numbers employed. Over time, this cohort of para-professional/ technician workers will become the dominant tier of the agrifood labour force (Figure 9).

With science and technology no longer the sole domain of universities, the VET system should be in a position to provide a substantial amount of training for these roles given VET’s applied focus. There remain, however, no employment based training pathways to support entry into these job roles. In part this is due to the ‘newness’ of the roles but it is also due to them sitting at a higher skill level than is traditionally associated with Australian Apprenticeships - a point of difference industry wants to reinforce as part of a broader repositioning of its image.

Opportunities exist to pilot an employment based training model focussed on technology and science, and that articulates into undergraduate programs as appropriate. Strong connections to Cooperative Research Centres and Research and Development Corporations need to be a key feature of the model to enable students to spearhead greater ‘speed to market’ and dissemination of research findings back in the workplace.

2.4 Develop national recognition programs to attract and optimise the skills of Indigenous Australians, migrants, refugees, and resource workers

As mineral prices fall to a third of their peak value and major resource projects continue to transition from the construction to production phase, skilled workers are filtering back into the mainstream workforce. These workers come with an inherent understanding of regional work conditions, world class skills in safety, and a high work ethic. Many resource sector skills are highly transferable - management, supervision, logistics and scheduling, operating large scale mobile plant and equipment. Agrifood has the potential to attract some of these skilled workers if well promoted pathways and a national recognition program are put in place and industry can coherently articulate the lifestyle and broader non-salaried benefits available within agrifood.

Indigenous people have long-held cultural and traditional responsibilities to protect and manage their land and waters. They own an estimated 20 per cent of the Australian continent upon which lies some of our most environmentally precious natural assets and they play a significant role in biodiversity conservation - Working on Country will train and employ around 730 Indigenous rangers by June 2015.

FIGURE 9. STRUCTURAL CHANGE UNDERWAY WITHIN THE AGRIFOOD WORKFORCE
As agrifood becomes more corporatised and industry bodies become more involved in workforce planning, there are significant opportunities for industry and governments to work together and develop sustainable employment of Indigenous Australians.

Newly settled migrants, including asylum seekers and refugees, remain an untapped resource of potentially skilled labour for the industry with many coming from rural areas within Africa and Asia. Service providers involved in delivery of programs to new migrants continue to praise the depth of skills and affinity with the industry held by these people. Further work on a well promoted, formal skills recognition process which provides a strongly supported pathway into industry is required.

3. BUILDING HIGHER LEVEL KNOWLEDGE AND SKILLS WITHIN THE EXISTING WORKFORCE

3.1 Build higher level skills within the workforce through delivery of Skill Sets, units of competency and full qualifications

Formal education and training has not been a widespread priority for many agrifood sectors although paradoxically, it remains one of the most knowledge intensive industries with a highly evolved informal learning culture. New thinking and research outcomes have for many sectors been accessed freely through timely and highly relevant extension services. Within family businesses, knowledge transfer is seamless and regional communities play a significant, often undervalued role in sharing information and knowledge.

The high-tech nature of modern agrifood, increasing levels of compliance, complexities of business and emergence of trade opportunities, now make the case for higher levels of formal education and training far stronger, particularly with the decline in government funded extension services. Building strategic capability and risk management are major priorities for industry. Product development, brand management and social media are all areas where enterprises recognise they need to be better skilled.

As outlined throughout this Scan and in those of previous years, publicly funded delivery of Skill Sets and individual units of competency must be systemically enabled (as opposed to being a short-term program response) to meet the incremental learning needs of agrifood sectors. Universities must also continuously review and refine their course structure and offerings and look past full-length programs, to also provide incremental learning opportunities for the industry.

3.2 Harmonise nationally endorsed qualifications with key industry certification/licensing requirements

Agrifood remains one of the most heavily regulated industries in the economy due to its close relationship with the food chain and the environment. Vocational education and training remains critical to ensuring compliance.

While companies must legally comply with regulations on issues such as workplace health and safety, employment and animal welfare, compliance with market access requirements and individual customer specifications is also increasing.

Third-party certification to confirm responsible and ethical practices is a key determinant of doing business within the supply chain, and for consumers it often represents a ‘social license to operate’.

Harmonising occupational licensing and Training Package qualifications is a key component of COAG’s licensing reforms. The rationale being that if the skills and knowledge stipulated in the license are a legitimate requirement to do the job, then they should be mirrored in the qualification. This removes duplication of effort and resources and also serves as a common benchmark to promote recognition of an individual’s skill across jurisdictional borders.

Third-party certification (TPC) schemes are a major regulatory mechanism in the global agrifood system as consumers demand higher standards of social responsibility. Although the sheer number of schemes can dilute consumer understanding, there are a series of major TPC schemes with high levels of industry acceptance and visibility in the Australian marketplace, for example, the Marine Stewardship Council.

In the same vein as harmonisation, there is significant opportunity to drive greater uptake of formal training within enterprises through alignment of the nationally endorsed Training Package qualifications and key certification schemes. This has the potential to build a training culture within several sectors where to date, formal training has struggled to gain acceptance as a smart business strategy.

3.3 Increase language, literacy, numeracy and digital literacy capabilities of the existing workforce as a platform for further skills development

Agrifood employers have major concerns with the poor literacy and numeracy levels of young job seekers, and the impact this has on productivity, compliance with regulations and the risk it poses to a safe work environment.

Longer term, poor levels of language, literacy and numeracy (LLN) skills will dictate the workforce’s capacity to absorb higher-level skills now in demand across many sectors. Some see the issue as a failing of the school system, however it is a far more complex issue with one-sixth of the Australian workforce educated overseas and who form the mainstay of employees in sectors such as production horticulture, meat and food processing.

Across agrifood, moves to address the LLN challenges are compounded by:
+ the small business nature of most agrifood businesses and their physical proximity to training providers
+ the seasonal, casual and part-time nature of employment in many sectors
+ the culturally diverse nature of the agrifood workforce
+ the ‘over-time’ nature of LLN skills acquisition
+ the level of awareness among employers of the relationship between LLN and productivity.

Industry peak bodies and associations have a major role to play in:
+ De-stigmatising LLN with employers by messaging it as central to productivity
+ Growing enterprise and worker demand for available programs.
4. INCREASING ENTERPRISE’S CAPABILITY TO INNOVATE, ADOPT NEW TECHNOLOGIES AND APPLY RESEARCH OUTCOMES

4.1 Continuously improve nationally endorsed qualifications and Skill Sets to meet industry’s emerging skills and knowledge requirements

Training Packages are demand-driven products responsive to the current and emerging skill needs of industry so by their very nature must be dynamic. As the rate of change within the economy increases, and that change impacts on individual sectors and job roles, Training Packages will continue to evolve. Some training providers want the rate of change ‘reduced or slowed down’ so that they can better cope with the implications for delivery, staffing, resources and compliance requirements. Other providers believe Training Packages do not change quickly enough.

From an agrifood perspective, continuous improvement is non-negotiable, especially for regulated sectors where job roles or processes can be subject to wide-sweeping change with little notice. Industry holds serious concerns about the training system’s capacity to implement the requisite changes in a timescale that does not jeopardise business compliance. As a minimum, industry is looking for the publicly funded system to respond to an annual update of any ‘continuous improvement’ to the Training Package and an immediate update where regulation or licensing is concerned.

4.2 Increase industry adoption rates of CRC/ RDC/ CSIRO outputs through collaboration and active partnerships with VET and universities

Agrifood’s R&D system is fragmented and complex. It includes state and Commonwealth Departments of Primary Industries, the Department of Industry, CSIRO, Cooperative Research Centres (CRC), Research and Development Corporations (RDC), Universities, and agribusinesses more broadly. Practical adoption of research findings remains a well-documented weakness of the system both with respect to ‘speed to market’ and capacity, and undermines much of its prospective economic value to industry and the economy.

Ultimately, those responsible for applying research outcomes on the ground will be trained by the VET sector (para-professionals and technicians), and there are strong calls for a transformative business model to create a working relationship between the two sectors.

Bringing trainers together with extension officers or researchers to provide context, theory and application in one learning process will enable VET students to spearhead dissemination and application on the ground, both during and after training. Knowledge transfer can occur through webinars broadcast to thousands of students, development of resources outlining the latest thinking, guest lecturing and site visits. It is a notion that goes to the very heart of building a sustainable model for innovation within industry and starts to lay the formative linkages between innovation, skills and productivity.

4.3 Establish formal articulation arrangements and pathways between VET and higher education sectors

Higher education continues to suffer from relatively low and, in some fields, declining enrolment numbers in the majority of traditional agrifood undergraduate programs. While there are several causes - industry’s image, outdated program structure and content, and lack of transparency around job prospects – improving pathways between VET and higher education would help to significantly increase the pool of prospective students.

Cultural and practical challenges remain in developing articulation pathways due to the differing teaching and learning environments of the respective sectors. With both VET and higher education becoming increasingly competitive, unique partnerships and articulation arrangements between high quality VET providers and innovative universities could be a much needed point of difference.

5. RETAINING THE BEST AND BRIGHTEST WORKERS

5.1 Establish a national network of regional ‘skills ecosystems’ to build a highly adaptive local workforce

Skills ecosystems are self-sustaining networks of skills and knowledge in an industry or region and is a term that was first used to describe the cluster of computer and biomedical companies in Silicon Valley.
Agrifood skills ecosystems are typically unique due to each region having its own history, social networks and industry profile. They recognise the deep interdependence of co-located industries and that only through businesses collaborating and sharing risk will regional Australia build sustainable and adaptive skilled labour pools capable of withstanding seasonality and market fluctuations.

The AgriFood National Regional Initiative (ANRI) has helped local industry and communities identify what they need to build an adaptive workforce in four separate regions of Australia: Western Downs in Queensland, Warren-Blackwood in WA, the Eyre Peninsula in South Australia and the Loddon-Mallee region in Victoria. By mid-2014 more than 2500 people had taken part in over a hundred workshops or training programs which involved:

- timeline mapping of peak seasonal labour demands in various industries
- ‘skills needs analysis’ to identify enterprise skill shortages and workforce needs in various local industries
- ‘skills recognition’ process to identify key skills needed by the region and emerging skills gaps, followed by up-skilling, gap training and new qualifications to build a better-trained, more versatile workforce
- ‘enhanced employer capability’ to train managers in best practice modern business management, so they can be better employers and retain skilled workers
- ‘cross-industry skillling’ to build a more mobile, flexible workforce with the skills to work in several different industries, often at different times of the year, resulting in more consistent employment year-round, higher earnings, job variety and added incentive to stay in the region.

Introduction of skills ecosystems across Australia remains an untapped mechanism for building regional productivity. Over 35 per cent of ANRI participants agreed that productivity of their business increased as a result of the program. ACIL Allen independently assessed the potential economic impact of the approach as lifting the productivity of the region by 3.2 per cent.

5.2 Develop, brand and promote opportunities for the formal recognition of agrifood workers’ skills

Recognition of Prior Learning (RPL) is an integral component of a true competency-based training and assessment system. It formally acknowledges a person’s skills and knowledge regardless of whether it has been acquired through training, work or life experience. For an industry such as agrifood, where many people are skilled but not credentialed, it represents a significant opportunity for workers to gain much-deserved recognition. Its potential is most important for experienced agrifood workers who lose their jobs or as a means of evaluating the skills of migrants and refugees who represent a valuable and largely untapped source of skilled labour.

Most research acknowledges that there has been a less than desired take-up of RPL. In 2013 only 8.2 per cent of students were granted RPL. Major barriers to people’s pursuit of RPL are cited as being: a lack of awareness of the actual process and its availability; the complexity and cost of the process; exclusivity of the language surrounding recognition; devaluing by learners of their own experiential learning; and sometimes a preference for participation in training.

As a strategy to underpin labour mobility and enable better utilisation of a worker’s skills, RPL must be better promoted and championed. Industry peak bodies, associations and high quality training providers have a major role to play in partnering with each other to publicise the process and ensure candidates receive strong and overt support in the workplace.

A review of agrifood sector websites indicates scant reference to areas outside of their immediate specialisation and as a consequence, little recognition of tangential career pathways into other parts of the industry.

Heavily linked to improving attraction into the industry and lifting retention rates, is identification and promotion of intra and inter-occupational pathways by industry bodies and agrifood careers websites (see 2.1).

5.4 Develop targeted responses to the skill needs of casual, contract and seasonal workers

During peak harvest periods, backpackers from overseas and ‘grey nomads’ make up a critical percentage of agrifood’s seasonal workforce. Their itinerant nature means there is little commitment to formal training, and little incentive for employers to provide training over and above functional tasks and basic workplace health and safety. A further source of labour is skilled migrants from Asia and Africa — many of whom possess a rural background, and who often require only the contextual skills and knowledge of Australia’s climate, its soils, vegetation and animal welfare standards.

Adding to the complex profile of work organisation is the growth of specialist contractors in tasks once carried out by an enterprise’s traditional workforce. Pacific seasonal workers, who may return in following seasons, add to this mix.

While the skills and knowledge needed by such workers are already codified in Training Packages, the ability of the tertiary sector to meet the skill needs of these various groups is limited due to the system’s focus on full qualifications. It is strongly recommended that the tertiary sector work with local industry bodies and regions to develop targeted responses that meet the skill needs of casual, contract and seasonal workers.
RESEARCH PRIORITIES

A. Analysis of the 2030 workforce as a result of new technologies, demographic and social change (emerging and evolving job roles, implications for work organisation and skills development).

As advanced economies increase their adoption of new technologies and science becomes pivotal to lifting productivity, jobs will be displaced, re-made and many more will be created in entirely new fields. Within agrifood, these factors will be compounded by the effects of an ageing labour force and rapid bifurcation of business models.

This futures-oriented research will project to 2030 and explore the job roles likely to emerge, diminish and those that will evolve across the agrifood sectors. It will consider the implications for work organisation and skills development.

B. Pilot and evaluate collaborative models to test how the VET system/publicly funded research sectors can work together to expose students to new knowledge and practices.

Agrifood’s knowledge transfer model is complex. While formal learning plays a role (through VET and higher education), there are many other mechanisms and bodies involved in informal and non-formal learning, such as RDCs/CRCs, industry associations, service providers and key suppliers to the industry.

This pilot and evaluation focuses on bringing together one or more CRCs/RDCs with a small network of high quality VET providers to develop and test the different ways both parties can work together to transfer new knowledge to students within the context of Training Package delivery (see 4.2).

C. Develop and validate a modern, flexible employment based training model including its attributes, likely job roles and critical success factors that would be attractive to both agrifood employers and potential employees in a wide range of sectors.

Current employment based training options are largely focussed on traineeships and apprenticeships which themselves are modelled on the traditional trades. This research would aim to identify one or more models for a more contemporary and flexible approach to employment based training, particularly for the higher level para-professional and technician job roles set to become the hallmark of the industry. It will identify those sectors and job roles to which the model(s) apply, their key attributes and critical success factors (see 2.3).

D. Develop a national brand strategy for agrifood careers which includes agreed brand attributes and value proposition which can be contextualised and adopted across agrifood sectors.

There is an urgent need to develop a national brand and common, contemporary narrative for agrifood careers for customisation by each sector. This work will develop a set of brand attributes and value propositions, and agreed collateral for customisation, use and distribution by industry bodies (see 2.1).

E. Utilise the 2016 Census to establish existing workforce numbers and existing skills base within the agrifood supply chain and across permanent, casual, contract and seasonal workers.

There are longstanding calls for an industry-wide survey of the agrifood industry to establish the scope and size of the workforce - current data is at best incomplete and at worst, wholly inaccurate. Australia’s 17th national Census will be held in August 2016 and there are opportunities to use the census data cross-referenced with relevant ANZCO codes to establish a broad picture of the industry and its workforce. Proposed data sets include:

- Age, sex and usual address
- Income, labour force status, occupation, hours worked and industry of employment
- Workplace address / Journey to work
- Country of Birth/Year of Arrival
- Main Language other than English spoken at Home/Proficiency in spoken English
- Attendance at an educational institution/ highest year of schooling and non-school qualifications
**ENABLING POLICY**

**A. Funding of Skill Sets and individual units of competency to meet the incremental learning needs of individual enterprises and learners**

Emerging technologies, changing business models and new market access requirements are just some of the factors driving an unprecedented rate of change across agrifood sectors. Skill Sets are continually cited as the response needed from the VET sector, however the lack of funding remains a frequent blockage for RTOs in attempting to respond to these needs. To be clear, industry is not proposing that Skill Sets be delivered at the expense of full qualifications, simply that Skill Sets form an equally valued and funded pathway within all jurisdictions (see Sections 2 and 3.1 for more detail).

**B. A transparent training market where individual RTO performance against agreed performance measures is made publicly available online**

Industry continue to voice strong concerns over the inconsistent, sometimes poor quality training and assessment outcomes from training providers. Overly shortened training, inappropriate delivery modes, and qualifications narrowed by training provider’s internal decision-making are commonly cited complaints. Industry is calling for absolute transparency of individual RTO performance and the publication of that data in a user friendly, on-line format to ensure clients of the system can make informed choices (see Section 2 for more detail).

**C. A more flexible, responsive and broader based Seasonal Worker Program which increases the coverage of participating countries and eligible industry sectors**

Sectors and individual enterprises are calling for urgent changes to improve flexibility and reduce the compliance burden of existing visa programmes.

In particular, there are calls to expand the Seasonal Worker Program to all agricultural industries and extend participating countries to include Vietnam, Cambodia, Malaysia and Thailand. Industry is also seeking a streamlined visa application processes to reduce administrative burdens (shorter application waiting periods, less onerous superannuation requirements and automatic provision of tax file numbers).

**D. Restoration of universal incentives to Certificate II traineeships in key entry level occupations**

Removal of standard commencement incentives for Certificate II traineeships continues to be a major concern for those industries where AQF Level 2 is the legitimate entry level for specific job roles. This is particularly the case for horticulture, food production and meat processing sectors.

Industry seeks the rapid reinstatement of incentives for those job roles where Certificate II is the legitimate entry level for employment.

**E. Review and update ANZSCO classifications to reflect new and emerging job roles and changing skill levels**

The role of ANZSCO is to define jobs and occupations according to level of skill and specialisation. Rapid and ongoing evolution of many agrifood job roles has left several ANZSCO classifications failing to keep pace with the higher skill levels at which these roles now sit. It also struggles to represent emerging job roles, such as irrigation designers and animal technicians, which fall into amorphous ANZSCO categories and make even harder the identification of workforce numbers and extent of training response required.

Industry parties have repeatedly called for a review of agrifood related ANZSCO codes given their widespread use as a baseline classification for decision-making across governments and the far-reaching consequences they have for key issues such as skilled migration.
Comprises rural production (commonly referred to as ‘agriculture’); amenity horticulture; conservation and land management; animal care and management.

The industry is extremely diverse with many sectors heavily export oriented, such as dairy, cotton, grains, wool and beef. Other sectors target the Australian market with both products and services for example, horticulture, conservation, landscaping, animal health and pet grooming. It remains an industry closely tied to the fortunes of commodity prices, weather patterns, biosecurity and household income. Approximately 430,000 people are directly employed within these and other sectors. Overall numbers in low skilled jobs are projected to decline due to increased automation, businesses consolidation and vertical integration. Growth is expected in para-professional/technician job roles as the industry rapidly evolves into one reliant on science and technology, and as corporatisation of farming continues.

MAJOR CHALLENGES & TRENDS
+ Dispelling agrifood’s outdated image within communities, prospective employees and students
+ Attracting and retaining skilled workers at all occupational levels
+ Equipping owners and managers with business management skills and change management expertise
+ Building the overall business capability and professionalism of smaller sectors and micro businesses
+ Building enterprise capability in the use and convergence of new technologies, robotics, automation and outcomes from the research and development sector
+ Building detailed understanding of Asian consumer preferences and market access requirements
+ Skilling and upskilling specialist contractors and casual workers
+ Establishing a seasonal workforce model which is responsive, productive and cost-efficient
+ Transitioning an ageing workforce into new, often technology based job roles
+ Ensuring timely and effective succession planning within family businesses
+ Evolving job roles which require higher, often technician-orientated skills and knowledge
+ Embedding sustainable practice as a core business strategy across the supply chain
+ Building industry and enterprise commitment to becoming ‘employers of choice’
+ Empowering communities to build skilled and adaptive labour pools in the regions
+ Growing the capabilities of industry leaders and establishing a coherent industry voice

SKILL SHORTAGES AND EMERGING SKILL NEEDS
+ Strategic planning and business management, risk management and financial planning skills
+ Mergers and acquisitions, business development
+ Export readiness and cultural competency – market planning, negotiation and contract management
+ Global supply chain management and logistics
+ Product innovation and development
+ Data analytics, market research, social media, brand strategy and marketing
+ Spatial and information technologies, use of sensors and robotics
+ Natural resource management – bush regeneration, sustainable management of land, water and vegetation
+ Biosecurity, emergency pest and disease response
+ Biotechnology
+ Large scale green wall design and installation

REPORTED SKILLED LABOUR SHORTAGES
+ Agricultural and horticultural mobile plant operators
+ Agricultural Labourers
+ Agricultural Scientists
+ Agricultural Technicians and Consultants
+ Animal Attendants and Trainers
+ Apiarists
+ Arborists
+ Conservation Officers/Bush Regenerators
+ Crop Farmers and Farm Workers
+ Environment, Parks and Landcare Managers
+ Environment and Agricultural Science Professionals
+ Farm Managers
+ Garden and Nursery Workers
+ Gardeners
+ General Farm hands
+ Greenkeepers
+ Irrigation Supervisors and Installers
+ Landscape Gardeners
+ Mixed Crop and Livestock Farmers
+ Nurserypersons
+ Park Rangers
+ Sales and Marketing Managers
+ Science Technical Officers
+ Shearers and Wool Classers
+ Soil Scientists
+ Station Hands/Jackaroos/Jillaroos
+ Veterinary Nurses
+ Veterinarians (large animals)
Comprises the food processing, pharmaceutical and beverage sub-sectors, and remains Australia’s largest manufacturing industry.

Its turnover in the 2012-2013 year from food and beverage processing was $91.6 billion and fresh produce $6.2 billion. According to the Australian Food and Grocery Council, in 2013 – 2014 there were 26,116 businesses in the industry employing 269,436 persons.

MAJOR CHALLENGES & TRENDS
+ Bifurcation of industry business models which focus on either niche production of premium, highly-differentiated products or large-scale volume
+ Rising input costs, overlapping regulatory structures and retail concentration all demand businesses find efficiencies in every part of the supply chain
+ Attracting, training and retraining workers at all skill levels
+ Evolving job roles which require higher, often technician orientated skills and knowledge
+ Building industry commitment and individual enterprise capability to become ‘employers of choice’

SKILL SHORTAGES AND EMERGING SKILL NEEDS
+ Advanced packaging – raw material reduction, down gauging, alternative packaging materials and the automation of processes
+ Cultural competency and awareness of Asian market preferences for products, presentation and transportation
+ Enhanced inventory management and warehouse management
+ Food innovation and product development
+ Investigating nutritional characteristics of raw materials before, during and after processing
+ Microbiological sampling and testing
+ Brand development, social media engagement and online retailing
+ Global supply chain management and logistics including full traceability
+ Developing and managing seamless HACCP plans and systems
+ Lean and agile manufacturing processes
+ Risk management skills and knowledge across all occupations
+ Waste management and conversion

REPORTED SKILLED LABOUR SHORTAGES
+ Agricultural Technicians (Dairy)
+ Bakers and Pastry Cooks
+ Food and Drink Factory Workers
+ Food Safety Auditors
+ Food Technologists
+ Production Managers
The industry comprises a number of distinct sectors including livestock processing, meat wholesaling, meat retailing, smallgoods manufacturing and wild game harvesting.

The meat industry is a volatile sector due to twin forces of seasonal conditions, particularly drought, and global market conditions. Australia is the world’s 7th largest beef producer and 3rd largest exporter of red meat. Beef production is widespread across Australia with around 29.3 million head of cattle across over 76,800 properties. Over 2,200 pork producers supply around 4.75 million pigs to the market annually. Australia’s 75.5 million sheep are reared for both wool and meat, and farmed on over 42,000 properties.

According to the 2013 Agrifood Value Chain report, the meat processing sector employs approximately 73,000 persons. This comprises 40,000 people employed in downstream processing such as abattoirs, over 4,000 in wholesale and a further 29,000 people employed in retail as butchers. In 2013 there were 7,563 apprentices and trainees in training and around 4,362 learners undertaking higher level training supported by industry.

**MAJOR CHALLENGES & TRENDS**

+ International and domestic focus on animal welfare
+ Growing role of social media and its influence on values and purchasing behaviours
+ Customer focus on whole of chain accountability and traceability
+ Changes in importing country/customer micro-testing requirements which have led to an increased number of on-plant laboratories
+ Improving skills in the wild game harvesting sector to meet international/customer pressure
+ Building a culture of continuous improvement, innovation and increased capability to drive productivity efficiencies and improve WHS
+ Establishing integrated management systems to offset rising cost of multiple compliance regimes and increasing complexity of market access
+ Building enterprise commitment to strengthening LLN capabilities of the workforce in the face of increased recruitment of culturally and linguistically diverse (CaLD) workers
+ Attracting high quality workers and lifting employee retention rates
+ Balancing the need for 457 Visa skilled labour with ensuring longer term career pathways remain open for existing workers
+ Loss of training providers as funding cuts and changes to funding models reduce overall business viability

**SKILL SHORTAGES AND EMERGING SKILL NEEDS**

+ Meat inspection, quality and individual market requirements
+ Ongoing shortage of trained/skilled supervisors in production areas
+ Whole of chain consistent practices in animal welfare and low-stress animal handling
+ National Livestock Identification System data management, reporting and interpretation to enable industry to meet biosecurity requirements
+ Microbiological sampling and testing
+ Wild game harvesting
+ 'Just-in-time' business management skills in meat retailing
+ Knowledge and skills to implement product diversification and ready-to-eat meals in butcher shops
+ Greater product/industry knowledge in retail butchery and greater online/marketing skills
+ Sustainable practice – energy conservation, water use and recycling, waste minimisation and cardboard recycling

**REPORTED SKILLED LABOUR SHORTAGES**

+ Meat Safety Inspectors
+ Animal Welfare Officers
+ Butchers and Smallgoods Makers (including apprentice butchers)
+ Meat Process Workers
+ Quality Assurance Personnel
+ Slaughterers, Boners and Slicers
+ Supervisors
Industry’s fortunes are directly tied to the vibrancy and strength of the Australian economy due to ownership structures and that race day attendance and betting on race outcomes remains the basis for industry profit and prize money. Betting activity is shifting more towards sports betting, particularly as corporate bookmakers aggressively promote their sports betting products ahead of race wagering products.

**MAJOR CHALLENGES & TRENDS**

+ Increasing focus on animal welfare - before, during and after racing careers – and growing industry wide capability and commitment in all sectors
+ Attracting, training and retaining workers in all key job roles
+ Chronic skilled labour shortages in core job roles, especially jockeys and track riders
+ Establishing innovative and productive job roles, supported by meaningful career paths
+ Increasing demand for and skilling of casual staff
+ Embedding workplace health and safety in all operations
+ Linking industry licensing and compliance requirements to formal skill development
+ Growing contemporary industry leaders to drive cultural change on workforce development
+ Embedding integrity operations and management training as part of an integrated approach to improving the image and credibility of the industry

**SKILL SHORTAGES AND EMERGING SKILL NEEDS**

+ Equine and canine animal behaviour, health and welfare
+ Biosecurity - disease prevention, diagnosis and emergency response
+ Selective canine breeding
+ Small business management
+ Track maintenance
+ Workplace health and safety

**REPORTED LABOUR SHORTAGES**

+ Equine Dentists and other animal professionals, outside of metropolitan areas
+ Farriers
+ Greenkeepers
+ Harness Drivers
+ Horse Trainers
+ Jockeys
+ Race Stewards
+ Stable Hands
+ Track Riders

Comprises three codes: thoroughbred, harness and greyhound – the ‘code’ refers to the breed and type of animal that races.

Thoroughbred racing is conducted on a massive scale, second only to the US, and according to the Australian Racing Board comprises 386 race clubs, 368 racetracks, 19,511 races, 992 jockeys, 3,678 trainers and 100,743 owners (and syndicate members). Harness Racing has 117 race clubs and claims just over 13,000 full-time equivalent jobs. Greyhound racing claims around 30,000 ‘registered participants’ with between 90-95 percent classified as hobbyists. The true size of employment in all three codes is only ever partly captured with the majority of people involved in the industry being self-employed, part-time, transient or hobbyists.
Comprises commercial wildcatch fishers, aquaculture producers and post-harvest enterprises including retail. Other commercial sub-sectors include non-food items such as pearls. In global terms, Australia is a minor player, producing less than 0.2 per cent of global seafood supply. Export earnings accounted for 49 per cent of production value in 2012-2013.

The gross value of the Australian wild-catch sector and aquaculture production increased by 3 per cent to $2.4 billion ($1.4 billion and $1 billion respectively) and excludes income generated by processing, wholesale and retail activities.

Total industry employment remains difficult to ascertain due to the seasonal nature of work and that workers often identify themselves as part of the maritime or food sector in census data. According to ABS, in 2012-13 there were 3,558 people employed in the aquaculture sector and 5,050 in the wildcatch sector. A further 1,783 people were employed in first stage value adding, 3,981 in wholesale operations and an estimated 7,000 in seafood retailing.

MAJOR CHALLENGES & TRENDS

+ Attraction, training and retention of workers at all skill levels – challenges include unsuitable job applicants, high staff turnover, skilling of remote/regional/casual workforce, competition for experienced crews to off-shore oil and gas projects, an ageing workforce and the need for cultural change among employers
+ Upskilling of existing workers in response to evolving job roles which require higher, often technician orientated skills
+ Building innovation capacity of enterprises and capability to adopt and adapt research findings
+ Growing contemporary industry leaders and managers to deal with a more complex business environment and the co-management of fisheries
+ Aligning nationally endorsed qualifications with industry licensing, compliance requirements and certification programs to build a learning culture, reduce administrative burden and increase uptake of training
+ Professionalising the industry to demonstrate sustainability credentials to consumers and the broader community
+ Increasing workforce proficiency in language, literacy, numeracy and digital literacy
+ Establishing a national framework for seafood training to ensure governments, industry, tertiary sector, schools and other service providers are working cohesively and optimising resources.

SKILL SHORTAGES AND EMERGING SKILL NEEDS

+ Aquatic animal behaviour, health, welfare and management
+ Aquatic biosecurity - pest and disease prevention, diagnostics and emergency response
+ Certification auditing (internal and external)
+ Compliance and regulation
+ Food safety and handling
+ Genetics, selective breeding and biotechnology
+ Market research, social media, marketing and brand development
+ Hatchery technologies
+ Natural resource management and scientific data capture, assessment and modelling
+ Whole of ecosystem approaches to resource management
+ Quality assurance and supply chain management including traceability
+ Retail knowledge of seafood products, sustainable productions systems and seafood health benefits
+ Seafood processing and value adding
+ Vessel operations and marine engineering
+ Workplace health and safety
+ Building skills of sea rangers to provide services to research and resource management agencies

REPORTED LABOUR SHORTAGES

+ Aquaculture Farm Managers
+ Aquaculture Workers
+ Coxswain, Marine Engineer and Skippers
+ Deck and Fishing Hands
+ Hatchery Managers
+ Fisheries Inspectors
+ Seafood Process Workers
+ Supply Chain Managers
impact of training packages
For the 2013 period, publicly funded enrolments across all seven (7) agrifood Training Packages declined by 2.8 per cent or 2,559 enrolments from the previous year (Figure 10). The VET system across all Training Packages experienced a 3.9 per cent decline in enrolments for the same period.

Significant variance in enrolment trends between the jurisdictions largely reflects the staggered introduction of student entitlement (Figure 11) with Victoria commencing in 2008, South Australia in 2012 and the rest of the jurisdictions becoming fully operational from 2014 onwards.

**FIGURE 10.** TOTAL VET STUDENT ENROLMENT ACROSS AGRIFOOD TRAINING PACKAGE FROM 2005-2013

**FIGURE 11.** TOTAL VET STUDENT ENROLMENT IN AGRIFOOD TRAINING PACKAGES ACROSS JURISDICTIONS FROM 2007-2013

**SOURCE:** NCVER
At an individual Training Package level (Figure 12), the decline in enrolments was most significant in the following Training Packages:

**Agriculture, Horticulture and Conservation and Land Management**
- Total enrolments fell by 6.9 per cent or 3,605 learners from 2012 levels to a total of 48,606 learners (includes apprentices and trainees)
- The majority of decline occurred in Queensland and Victoria
- Qualification levels most severely affected were at Certificate II (declining by 9 per cent or 1,622 enrolments) and Diploma (falling by 22 per cent or 913 enrolments)
- Numbers of apprentices and trainees (in training) declined by 931 or 7.3 per cent to a total of 11,847 learners.

**Seafood**
- Total enrolments fell by 46.8 per cent or 828 learners from 2012 levels to a total of 940 learners (includes apprentices and trainees)
- The majority of decline occurred in Queensland and the Northern Territory
- Qualification levels most severely affected were Certificate III (dropping by 63.7 per cent or 495 enrolments) and Certificate IV (dropping by 51.9 per cent or 108 enrolments)
- Numbers of apprentices and trainees (in training) declined by 17 or 9.3 per cent to a total of 165 learners.

**Meat**
- Total enrolments fell by 4.8 per cent or 600 learners from 2012 levels to a total of 11,925 learners (includes apprentices and trainees)
- The majority of decline occurred in Queensland and Victoria
- The qualification level most severely affected was Certificate IV (dropping by 44.3 per cent or 334 enrolments)
- Numbers of apprentices and trainees (in training) declined by 425 or 5.3 per cent to a total of 7,563 learners.

**Racing**
- Total enrolments fell by 15.9 per cent or 347 learners from 2012 levels to a total of 940 learners (includes apprentices and trainees)
- The majority of decline occurred in Tasmania and Victoria
- The qualification level most severely affected was Certificate III (dropping by 23.6 per cent or 303 enrolments)
- Numbers of apprentices and trainees (in training) declined very slightly by 8 or 1.1 per cent to a total of 697 learners.

Growth in enrolments occurred in the following Training Packages:

**Food Processing**
- Total enrolments increased by 17.4 per cent or 2,101 learners from 2012 levels to a total of 12,090 (includes apprentices and trainees)
- The majority of increase occurred in Victoria with an additional 2,054 enrolments and South Australia with an increase of 303 enrolments
- The qualification level with the greatest increase in enrolments was Certificate III (rising by 28.9 per cent or 2,300 enrolments)
- Numbers of apprentices and trainees (in training) increased by 326 or 5.5 per cent to a total of 6,298 learners.

**Animal Care and Management**
- Total enrolments increased by 6.8 per cent or 677 learners from 2012 levels to a total of 10,610 (includes apprentices and trainees)
- The majority of increase occurred in New South Wales with an additional 528 enrolments and South Australia with an increase of 276 enrolments
- The qualification level with the greatest increase in enrolments was Certificate IV (rising by 12.4 per cent or 379 enrolments)
- Numbers of apprentices and trainees (in training) declined by 51 or 5.2 per cent to a total of 977 learners.

**Sugar Milling**
- From a very low base, total enrolments increased from 12 learners in 2012 to a total of 63 learners in 2013
- Delivery of the Training Package occurs only in Queensland and only in Certificate IV
- No apprentices or trainees are in training.
The significant disconnect between how regional Australia learns and how the national training system offers, plans and funds training is again at the forefront of feedback to the Environmental Scan process. In simple terms, the currency of the system remains full qualifications and sits at odds with the learning culture of the vast majority of agrifood sectors, which is developmental, socially embedded and occurs over a lifetime.

Industry remains sharply critical of the persistent refusal of funding models to fully embrace delivery of Skill Sets in addition to full qualifications. Completion rates for qualifications increased from 22 per cent to 31 per cent over the 2005 to 2012 period. Of those learners not completing an agrifood qualification in 2014, over 88.4 per cent confirmed that they had still ‘fully or partly achieved their main reason for doing the training’.

There are views that the Commonwealth’s decision in May 2011 to remove standard commencement incentives for Certificate II traineeships continues to have a negative impact on those industries where it represents the legitimate entry level qualification, particularly in meat, horticulture and some agricultural sectors (Figure 13).

Trainee commencements dropped by 16.9 per cent across agrifood in the 24 months to 30 July 2014.

In 2013, the VET system (all Training Packages) experienced a 25.9 per cent decline in apprenticeship and traineeship commencements from 2012, with significant falls recorded by every jurisdiction, reinforcing the view that the decision has had a universal impact.

**FIGURE 12. VET STUDENT ENROLMENTS AND COMPLETIONS IN AGRIFOOD TRAINING PACKAGES 2005 – 2013**

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<tbody>
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<td>AGF Agrifood</td>
<td>14,244</td>
<td>13,322</td>
<td>14,336</td>
<td>12,275</td>
<td>10,357</td>
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<td>FDF Food Processing</td>
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<td>SUG Sugar Milling ^1</td>
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<td>79</td>
<td>4</td>
<td>-</td>
<td>56</td>
<td>64</td>
<td>93</td>
<td>12</td>
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<td>MTM Meat</td>
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<td>11,171</td>
<td>11,481</td>
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<td>AHC Agriculture, Horticulture and Conservation Land Management ^2</td>
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<td>54,541</td>
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<td>48,606</td>
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<td>RTD Conservation and Land Management (now AHC)</td>
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<td>7,249</td>
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<td>8,800</td>
<td>-307</td>
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<td>RTE Rural Production (now AHC)</td>
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<td>19,191</td>
<td>20,132</td>
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<td>ACM Animal Care and Management</td>
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Source: NCVER (a) unavailable at the time of analysis

Notes to data:
1 In April 2012, new qualifications for the Sugar Milling sector were endorsed and incorporated into the FDF10 Food Processing Training Package. The SUG02 Sugar Milling Training Package and its qualifications are now superseded.
2 During 2010-2011 the new AHC10 Agriculture, Horticulture and Conservation Land Management Training Package replaced three previous Training Packages for Conservation and Land Management; Rural Production; and Amenity Horticulture.

(a) Unavailable at the time of analysis

19 NCVER, 2014, Australian Vocational Education and Training statistics; Student outcomes 2014
AGRIFOOD STUDENT DEMOGRAPHICS

Analysis of 2013 learner demographics across all agrifood Training Packages reinforces industry’s claims on learning culture, and the diversity of learner and geographic location to which Registered Training Organisations need to respond:

+ 74 per cent of all publicly funded agrifood training takes place in Victoria, Queensland and New South Wales (Figure 14)
+ 60 per cent of agrifood learners are located outside of Australia’s major cities (Figure 15)
+ 86 per cent of enrolments are in qualifications at Certificate III level or below (Figure 16)
+ 31 per cent of all agrifood learners are trainees or apprentices (Figure 17)
+ 53 per cent of learners are aged 25 years and over (Figure 18)
+ 55 per cent of learners are defined in socio-economic terms as being in quintiles 1 and 2 – the most disadvantaged cohorts (Figure 19)
+ 80.4 per cent of agrifood students study part-time
+ 8 per cent of agrifood students are Indigenous Australians
+ 66 per cent of learners are male (58,027).

FIGURE 13. APPRENTICE AND TRAINEE COMMENCEMENTS AND COMPLETIONS ACROSS AGRIFOOD TRAINING PACKAGES 2010 - 2014

SOURCE: NCVER
FIGURE 14. STATE AND TERRITORY ENROLMENTS ACROSS AGRIFOOD TRAINING PACKAGES IN 2013

FIGURE 15. STUDENT REMOTENESS ACROSS AGRIFOOD TRAINING PACKAGES IN 2013

FIGURE 16. ENROLMENTS ACCORDING TO AQF LEVEL ACROSS AGRIFOOD TRAINING PACKAGES IN 2013

FIGURE 17. STATE AND TERRITORY ENROLMENTS ACROSS AGRIFOOD TRAINING PACKAGES IN 2013

FIGURE 18. STATE AND TERRITORY ENROLMENTS ACROSS AGRIFOOD TRAINING PACKAGES IN 2013

FIGURE 19. STATE AND TERRITORY ENROLMENTS ACROSS AGRIFOOD TRAINING PACKAGES IN 2013

14-19 SOURCE: NCVER
Future direction endorsed components
SECTION 4
FUTURE DIRECTIONS FOR ENDORSED COMPONENTS OF TRAINING PACKAGES

SHORT TO MEDIUM TERM – FUTURE DIRECTIONS

The future direction of Training Packages is essentially driven by two factors:

1. Changes initiated by industry in response to new technologies, industry practices or knowledge, new licensing or regulatory requirements; and/or
2. Changes made by Government to the Standards for Training Packages and/or underpinning policy.

AgriFood Skills Australia’s internal policy on continuous improvement of Training Packages is that wherever possible, changes will be ‘batched’ together to limit the impact on both learners and Registered Training Organisations.

Where Government places a deadline by which policy must be implemented or where industry demands a fast response from the VET system, incremental change may be necessary outside of the ‘batching’ schedule.

NEW OR CHANGING INDUSTRY REQUIREMENTS

AgriFood sectors are rapidly evolving in terms of the skills and knowledge needed to remain profitable, sustainable and globally competitive. These changes must be reflected within the Training Package qualifications.

AgriFood Skills Australia maintains an online Continuous Improvement Register to enable any stakeholder to provide feedback on how well existing Training Packages are responding to industry’s needs and if new skills and knowledge need to be incorporated. This process supplements ongoing consultation with industry stakeholders and development of the annual Environmental Scan which, as the name suggests, scans the environment for new and emerging issues impacting upon the skills and knowledge needed by the workforce. From these inputs, AgriFood produces a biannual Continuous Improvement Plan which sets out the changes to be made to Training Packages and which alerts stakeholders, particularly Registered Training Organisations and State Training Authorities, to enable them to plan and prepare ahead of a new release.

As a result of feedback, the following industry sectors and sub-sectors have been identified as requiring specific continuous improvement activity in 2015.

NEW OR CHANGING POLICY REQUIREMENTS

New Standards for Training Packages were endorsed by the Standing Council on Tertiary Education Skills and Employment in November 2012. All Training Packages are required to meet the new Standards for Training Packages by 31 December 2015.

A key feature of the new standards is that Training Packages will now separate the standard for competent performance in the workplace from other useful advice for training providers. This results in a simpler unit of competency with advisory information provided in a ‘Companion Volume’, the structure of which will be tailored to the industry or sector as appropriate.

New ‘assessment requirements’ for each unit of competency clearly specify the evidence required to determine the learner has achieved the required standard for performance and holds the requisite knowledge for the unit. This will ensure greater consistency in assessment outcomes across Registered Training Organisations, an issue which continues to be a significant concern for agrifood sectors.

Wherever possible, Training Packages will be developed to meet the new Standards for Training Packages prior to 31 December 2015 as part of scheduled continuous improvement activity. Those Training Packages which are already a priority for continuous improvement due to industry driven change are the first Training Packages to be aligned to the new standards.
MEDIUM TO LONG TERM – FUTURE DIRECTIONS

In April 2014, the Council of Australian Governments (COAG) Industry and Skills Council agreed to six objectives for reform of the VET system. One of the objectives is a national system of streamlined, industry defined qualifications that is able to respond flexibly to major national and state priorities and emerging areas of skills needs.

In October 2014, the Department of Industry released an initial discussion paper on the ‘Review of Training Packages and Accredited Courses’ with the intention of:

+ Looking at Training Packages to see if changes could make them more relevant to the modern economy;
+ Looking at the one size fits all approach to the regulation, development and maintenance of Training Packages and accredited courses to see if a more tailored approach would lead to improvement of training outcomes;
+ Looking at whether a stronger focus on the assessment of students would better ensure the training system meets the needs of employers and individuals.

At the time of writing, outcomes from the consultative process are not known. Updates on this aspect of the VET Reform agenda can be found on www.vetreform.industry.gov.au

HOW STAKEHOLDERS CAN STAY INFORMED

Reflective of its diversity and geographic spread, RTOs that serve agrifood industries range from the large scale public providers through to small niche market providers, secondary schools, group training companies and job agencies. Spread across urban, regional and remote Australia there were 768 training providers with explicit scope for current Agrifood Training Packages at January 2015:

+ 435 Agriculture, Horticulture and Conservation and Land Management Training Package
+ 3 Agrifood Training Package
+ 73 Animal Care and Management Training Package
+ 54 Australian Meat Industry Training Package
+ 140 Food Processing Training Package
+ 28 Racing Training Package
+ 35 Seafood Training Package

AgriFood Skills Australia strongly encourages stakeholders to subscribe to Training Package Updates and Alerts through the AgriFood website www.agrifoodskills.net.au:

+ Training Package Updates are issued for each Training Package on a monthly basis and keep stakeholders up to date on the progress of continuous improvement projects and the status of components submitted for endorsement;
+ Training Package Alerts are issued on an ‘as needs’ basis to notify stakeholders when new releases of Training Package components are published to the national register at www.training.gov.au

IMAGE: Australian Government Department of Agriculture
<table>
<thead>
<tr>
<th>TRAINING PACKAGE</th>
<th>SECTOR/SUB-SECTOR AND NATURE OF CHANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACM</td>
<td>Animal Care and Management</td>
</tr>
<tr>
<td></td>
<td>+ Horse Industries</td>
</tr>
<tr>
<td></td>
<td>Development of entry level qualification for workers in horse industries in response to safety concerns around training for the horse industries</td>
</tr>
<tr>
<td></td>
<td>+ Veterinary Nursing</td>
</tr>
<tr>
<td></td>
<td>Review of assessment guidelines and conditions for veterinary nursing qualifications in response to concerns about quality of assessment in the sector</td>
</tr>
<tr>
<td></td>
<td>+ Captive Animals</td>
</tr>
<tr>
<td></td>
<td>Review of captive animals qualifications in response to changing job roles for wildlife keepers</td>
</tr>
<tr>
<td></td>
<td>+ Companion Animal Services</td>
</tr>
<tr>
<td></td>
<td>Review of companion animal services qualifications in response to an identified need for formal accredited training for assistance dog workers to improve the portability and transferability of skills across the industry</td>
</tr>
<tr>
<td></td>
<td>+ Animal Control and Regulation</td>
</tr>
<tr>
<td></td>
<td>Review of animal control and regulation qualification in response to a request to review requirements for a Large Animal Rescue Skill Set covering large animal incident response</td>
</tr>
<tr>
<td></td>
<td>The following sectors are being reviewed in the context of transition to the NSSC Standards for Training Packages:</td>
</tr>
<tr>
<td></td>
<td>+ Animal Studies</td>
</tr>
<tr>
<td></td>
<td>+ Animal Technology</td>
</tr>
<tr>
<td></td>
<td>+ Farriery</td>
</tr>
<tr>
<td></td>
<td>+ Equine Dentistry</td>
</tr>
<tr>
<td></td>
<td>+ Pet Grooming</td>
</tr>
<tr>
<td></td>
<td>+ Cross Sector Units</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>AHC</td>
<td>Agriculture, Horticulture and Conservation and Land Management</td>
</tr>
<tr>
<td></td>
<td>+ Pest and Weed Management</td>
</tr>
<tr>
<td></td>
<td>Review of qualification framework to ensure holistic and strategic pest management skills are captured in response to the outcomes of Invasive Animals CRC ‘Scoping study: training and capacity building in vertebrate pest management’ report</td>
</tr>
<tr>
<td></td>
<td>+ Arboriculture</td>
</tr>
<tr>
<td></td>
<td>Review of qualification framework in response to identified need to provide outcomes for ground-based tree workers as well as for those working at heights and emerging job roles at higher AQF levels</td>
</tr>
<tr>
<td></td>
<td>+ Permaculture</td>
</tr>
<tr>
<td></td>
<td>Development of permaculture qualifications for inclusion in AHC based on existing accredited course materials</td>
</tr>
<tr>
<td></td>
<td>+ Agriculture: Livestock</td>
</tr>
<tr>
<td></td>
<td>Review qualification structures in response to feedback that existing qualifications are not flexible enough to meet needs of all industry sectors</td>
</tr>
<tr>
<td></td>
<td>+ Agriculture: Pork Production</td>
</tr>
<tr>
<td></td>
<td>Review of existing AQF3 qualification to ensure it accurately reflects job role plus investigation of an emerging job role at AQF4</td>
</tr>
<tr>
<td></td>
<td>+ Agriculture: Poultry</td>
</tr>
<tr>
<td></td>
<td>Review current AQF3 qualification to ensure it meets the needs of the commercial egg production sector</td>
</tr>
<tr>
<td></td>
<td>+ Agriculture: Broadacre Cropping</td>
</tr>
<tr>
<td></td>
<td>Review of qualification structures to ensure it is sufficiently flexible to meet the needs of all industry sectors</td>
</tr>
<tr>
<td></td>
<td>+ Agriculture: Shearing &amp; Wool</td>
</tr>
<tr>
<td></td>
<td>Review animal welfare requirements in shearing qualifications</td>
</tr>
<tr>
<td></td>
<td>+ Agriculture: Horse Breeding/Horse Industries</td>
</tr>
<tr>
<td></td>
<td>Development of performance horse management qualifications and higher level qualifications for workers in the performance horse sector</td>
</tr>
<tr>
<td></td>
<td>+ Agriculture: Beekeeping</td>
</tr>
<tr>
<td></td>
<td>Review biosecurity and pest management content</td>
</tr>
<tr>
<td></td>
<td>+ Agriculture: Biosecurity Emergency Response</td>
</tr>
<tr>
<td></td>
<td>Address a need to clarify between emergency response and on-farm biosecurity requirements</td>
</tr>
<tr>
<td></td>
<td>+ Agriculture: Rural Crime Prevention</td>
</tr>
<tr>
<td></td>
<td>Investigate opportunity to include crime prevention principles and practices at a range of AQF levels</td>
</tr>
</tbody>
</table>
### AHC
**Agriculture, Horticulture and Conservation and Land Management**

The following sectors are being reviewed in the context of transition to the NSSC Standards for Training Packages:

- Agriculture: Dairy
- Agriculture: Organic Farming
- Agriculture: Agribusiness
- Agriculture: Rural Merchandising
- Conservation and Land Management General
- Indigenous Land Management and Aboriginal-sites Work
- Natural Area Restoration
- Lands, Parks and Wildlife
- Community Coordination and Facilitation
- Horticulture General
- Production Horticulture including Floriculture and Viticulture
- Landscaping
- Parks and Gardens
- Irrigation
- Seed Production, Processing and Testing
- Sports Turf Management
- Retail and Production Nursery
- Commercial Composting
- Cross Sector Units

### FDF
**Food Processing**

- **Retail Baking**
  Review qualification structures in response to outcomes of AgriFood report 'Labour market and training issues in the baking industry'

- **Wine Industry Operations**
  Investigate whether the qualification structure has enough flexibility to allow an outcome for all wineries

- **Food Science and Technology**
  Investigate whether the qualification structure allows an outcome for food producers not conducting their own microbiological testing

The following sectors are being reviewed in the context of transition to the NSSC Standards for Training Packages:

- Food Processing including Sales
- Food Safety Auditing
- Pharmaceutical Manufacturing
- Sugar Milling
- Cross Sector Units

### MTM
**Meat Industry**

- **Meat Retailing**
  Inclusion of new meat retail units

- **Abattoirs**
  Investigate emerging job roles in livestock handling, quality assurance and meat packing plus inclusion of new units in dog handling, energy efficiency, animal welfare auditing, document review, and validation of export permits

- **Meat Safety**
  Incorporating revised Australian Export Meat Inspection System

- **Skill Sets**
  Identification of new Skill Sets in waste water management and supervision

- **Plant Engineering**
  Safety requirement to train plant engineers in use of new refrigeration technologies

The following sectors are being reviewed in the context of transition to the NSSC Standards for Training Packages:

- Smallgoods
- Food Services
- Management and Leadership Qualifications

### RGR
**Racing**

- **Horse - Thoroughbred and Harness including Administration**
  Investigate changed/emerging job roles for race administration and stewarding, advanced stablehands and jockey coaches

- **Greyhound**
  Investigate changed/emerging job roles in race administration

### SFI
**Seafood**

- **Fisheries Compliance & Environmental Management**
  Investigate emerging job roles in marine resource management and review structure of Diploma of Fisheries Compliance

The following sectors are being reviewed in the context of transition to the NSSC Standards for Training Packages:

- Aquaculture
- Seafood Processing
- Fishing Operations
- Seafood Sales and Distribution
- Cross Sector Units
APPENDIX A
REPORT ON PREVIOUS CONTINUOUS IMPROVEMENT ACTIVITY

On 3 April 2014, the COAG Industry and Skills Council dissolved the body responsible for the policy and endorsement of Training Packages (the National Skills Standards Council) in its bid to ‘streamline governance arrangements and committees and involve industry in policy development and oversight of the performance of the VET sector’.

The Australian Industry Skills Committee (AISC) is being established ‘to provide industry with a formal role in relation to policy directions and decision making in the national training system’. The AISC will be responsible for the endorsement of Training Packages, however at the time of writing, the Committee was yet to be established.

During the intervening period, the submission of new or revised Training Packages for endorsement has been possible through an interim process but only where there exists an urgent ‘government or regulatory imperative’.

As a consequence, in the 12 months to February 2015, minor changes to the Seafood Training Package are the only occasion where a new version has been issued (Figure 20).

All other work throughout the 12 month period to 2015 has focussed on the re-development of AgriFood Skills Australia’s seven (7) Training Packages in response to the changing needs of industry and Government’s mandated deadline of 31 December 2015 for the alignment of all qualifications and units of competency to the new Standards for Training Packages.

FIGURE 20: SEAFOOD TRAINING PACKAGE SFI11 - CONTINUOUS IMPROVEMENT ACTIVITY

<table>
<thead>
<tr>
<th>TRAINING PACKAGE</th>
<th>SEAFOOD TRAINING PACKAGE SFI11</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRIEF SUMMARY OF CHANGE</td>
<td>INDUSTRY IMPERATIVES/ RATIONALE FOR CHANGE</td>
</tr>
<tr>
<td>Version 2.1</td>
<td>New Skills Sets:</td>
</tr>
<tr>
<td>Addition of two new Skill Sets</td>
<td>+ SFISS00013 Senior Deckhand Skill Set</td>
</tr>
<tr>
<td></td>
<td>+ SFISS00014 Skipper Skill Set</td>
</tr>
</tbody>
</table>

As part of its commitment to workforce planning, the Southern Rock Lobster industry identified a need for its workforce to gain skills in all aspects of catching, handling, caring for and preparing rock lobsters for export. The skills required cover WHS, environmental stewardship, animal welfare and food safety. The Senior Deckhand and Skipper Skill Sets assist the Southern Rock Lobster industry to raise its international competitiveness through the majority of industry workers completing a certification program based on current units of competency.
**WORK CURRENTLY UNDERWAY**

In the 12 months period to February 2015, the following continuous improvement activity has been undertaken although at the time of writing, was yet to be submitted for endorsement (Figure 21).

**FIGURE 21:**  TRAINING PACKAGE CONTINUOUS IMPROVEMENT ACTIVITY FEBRUARY 2014 - FEBRUARY 2015

<table>
<thead>
<tr>
<th>TRAINING PACKAGE</th>
<th>SUMMARY OF CHANGES</th>
<th>INDUSTRY IMPERATIVES/ RATIONALE FOR CHANGE</th>
<th>EST.DATE FOR SUBMISSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACM</td>
<td>Animal Care and Management</td>
<td><strong>Horse Industries</strong>: development of entry level qualification for workers in broad horse industry sectors</td>
<td>Identified requirement for standardisation of entry level requirements for workers and in response to safety concerns around initial training in the horse industries</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Veterinary Nursing</strong>: Review of assessment guidelines and conditions for veterinary nursing qualifications</td>
<td>Identified concerns about quality of assessment in the sector Addressing transition to NSSC Standards concurrently</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Captive Animals</strong>: Review of captive animals qualifications</td>
<td>Changing job roles for wildlife keepers Addressing transition to NSSC Standards concurrently</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Companion Animal Services</strong>: Review of companion animal services qualifications</td>
<td>Investigate formal accredited training for assistance dog workers to improve the portability and transferability of skills across the industry Addressing transition to NSSC Standards concurrently</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Animal Control and Regulation</strong>: review of requirement for a Large Animal Rescue Skill Set</td>
<td>Investigate requirement for a Skill Set covering large animal incident response Addressing transition to NSSC Standards concurrently</td>
</tr>
<tr>
<td></td>
<td>Preliminary drafting of all ACM components according to NSSC Standards for Training Packages</td>
<td>N/A</td>
<td>April 2015 and October 2015</td>
</tr>
<tr>
<td>Training Package</td>
<td>Summary of Changes</td>
<td>Industry Imperatives/ Rationale for Change</td>
<td>Est. Date for Submission</td>
</tr>
<tr>
<td>------------------</td>
<td>-------------------</td>
<td>------------------------------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td><strong>AHC</strong>&lt;br&gt;Agriculture, Horticulture and Conservation and Land Management</td>
<td><strong>Pest and Weed Management:</strong> Review of qualification framework</td>
<td>Investigate appropriate qualification structures to ensure holistic and strategic pest management skills are captured in response to the outcomes of Invasive Animals CRC ‘Scoping study: training and capacity building in vertebrate pest management’ report Addressing transition to NSSC Standards concurrently</td>
<td>April 2015</td>
</tr>
<tr>
<td></td>
<td><strong>Arboriculture:</strong> Review of qualification framework</td>
<td>Identified need to provide outcomes for ground-based tree workers as well as for those working at heights. Investigate emerging job roles at higher AQF levels. Addressing transition to NSSC Standards concurrently</td>
<td>April 2015</td>
</tr>
<tr>
<td></td>
<td><strong>Permaculture:</strong> Development of national permaculture qualifications</td>
<td>Identified requirement for nationally endorsed permaculture qualifications</td>
<td>April 2015</td>
</tr>
<tr>
<td></td>
<td><strong>Agriculture: Livestock (General):</strong> Review qualification structures</td>
<td>Investigate feedback that current qualifications are not flexible enough to meet the needs of all industry sectors Addressing transition to NSSC Standards concurrently</td>
<td>April 2015</td>
</tr>
<tr>
<td></td>
<td><strong>Agriculture: Pork Production:</strong> Review qualification structures</td>
<td>Identified that current AQF3 qualification no longer accurately reflects job role Investigate emerging job role at AQF4 Addressing transition to NSSC Standards concurrently</td>
<td>April 2015</td>
</tr>
<tr>
<td></td>
<td><strong>Agriculture: Poultry:</strong> Review qualification structures</td>
<td>Identified that current AQF3 qualification does not suit the needs of the commercial egg production sector Addressing transition to NSSC Standards concurrently</td>
<td>April 2015</td>
</tr>
<tr>
<td></td>
<td><strong>Agriculture: Dairy:</strong> Review for transition to the NSSC Standards (in conjunction with other livestock components)</td>
<td>N/A</td>
<td>April 2015</td>
</tr>
<tr>
<td></td>
<td><strong>Agriculture: Broadacre Cropping:</strong> Review for transition to the NSSC Standards</td>
<td>N/A</td>
<td>April 2015</td>
</tr>
<tr>
<td></td>
<td><strong>Agriculture: Organic Farming:</strong> Review for transition to the NSSC Standards</td>
<td>N/A</td>
<td>April 2015</td>
</tr>
<tr>
<td></td>
<td><strong>Agriculture: Agribusiness:</strong> Review for transition to the NSSC Standards</td>
<td>N/A</td>
<td>April 2015</td>
</tr>
<tr>
<td></td>
<td><strong>Agriculture: Rural Merchandising:</strong> Review for transition to the NSSC Standards</td>
<td>N/A</td>
<td>April 2015</td>
</tr>
<tr>
<td></td>
<td><strong>Agriculture: Shearing &amp; Wool:</strong> Review for transition to the NSSC Standards</td>
<td>N/A</td>
<td>April 2015</td>
</tr>
<tr>
<td></td>
<td><strong>Agriculture: Beekeeping:</strong> Review for transition to the NSSC Standards</td>
<td>N/A</td>
<td>April 2015</td>
</tr>
<tr>
<td></td>
<td><strong>Agriculture: Biosecurity Emergency Response:</strong> Review for transition to the NSSC Standards</td>
<td>N/A</td>
<td>April 2015</td>
</tr>
<tr>
<td></td>
<td><strong>Conservation and Land Management:</strong> Review for transition to the NSSC Standards</td>
<td>N/A</td>
<td>April 2015</td>
</tr>
<tr>
<td></td>
<td>Preliminary drafting of all ACM components according to NSSC Standards for Training Packages</td>
<td>N/A</td>
<td>April 2015 and November 2015</td>
</tr>
<tr>
<td>TRAINING PACKAGE</td>
<td>SUMMARY OF CHANGES</td>
<td>INDUSTRY IMPERATIVES/ RATIONALE FOR CHANGE</td>
<td>EST. DATE FOR SUBMISSION</td>
</tr>
<tr>
<td>------------------</td>
<td>-----------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>MTM Meat</td>
<td><strong>Abattoirs:</strong> Review of abattoirs qualifications framework</td>
<td>Identified emerging job roles in livestock handling, quality assurance and meat packing</td>
<td>August 2015</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Inclusion of new units in dog handling, energy efficiency, animal welfare auditing, document review, validation of export permits</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Addressing transition to NSSC Standards concurrently</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Meat Safety:</strong> review qualifications</td>
<td>Revised Australian Export Meat Inspection System</td>
<td>August 2015</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Addressing transition to NSSC Standards concurrently</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>All other sectors:</strong> Review for transition to the NSSC Standards</td>
<td>N/A</td>
<td>August 2015</td>
</tr>
<tr>
<td>FDF Food Processing</td>
<td><strong>Retail Baking:</strong> Review qualification structures</td>
<td>In response to outcomes of AgriFood report ‘Labour market and training issues in the baking industry’</td>
<td>March 2015</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Addressing transition to NSSC Standards concurrently</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Wine Industry Operations:</strong> Review qualification structures</td>
<td>Identified that current qualification structure does not have enough flexibility to allow an outcome for all wineries</td>
<td>March 2015</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Addressing transition to NSSC Standards concurrently</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Preliminary drafting of all FDF components according to NSSC Standards for Training Packages</td>
<td>N/A</td>
<td>March 2015 and October 2015</td>
</tr>
<tr>
<td>RGR Racing</td>
<td>Preliminary drafting of all RGR components according to NSSC Standards for Training Packages</td>
<td>N/A</td>
<td>June 2015</td>
</tr>
<tr>
<td>SFI Seafood</td>
<td>Preliminary drafting of all SFI components according to NSSC Standards for Training Packages</td>
<td>N/A</td>
<td>November 2015</td>
</tr>
</tbody>
</table>

Further information on all Training Package continuous improvement activity may be found on AgriFood Skills Australia [www.agrifoodskills.net.au](http://www.agrifoodskills.net.au) and through the national register at [www.training.gov.au](http://www.training.gov.au)
APPENDIX B
METHODOLOGY

True to the purpose of the Environmental Scan, AgriFood’s methodology for the Scan is driven by the need to capture the story that lies beneath the data and statistics. Only when we understand that story, can we confidently provide advice on how well, or not, the VET system is meeting industry’s needs and the precise interventions needed to build a world class workforce.

FACE TO FACE CONSULTATIONS

Again this year AgriFood has placed a strong emphasis on face-to-face consultations which generate rich and deep conversations. Between September - October 2014, AgriFood Skills Australia held 21 Environmental Scan workshops across the jurisdictions that separately targeted industry bodies and enterprises; training providers and related service organisations; senior industry executives.

To ensure the Scan is constantly refreshed and its findings tested, AgriFood has actively sought to gather the views of enterprises and stakeholders not previously involved in the consultation process. Over 80 per cent of participants and 79 per cent of organisations were new to the 2015 Environmental Scan process and involved over 300 workshop attendees.

NATIONAL SURVEY

In preparing the 2015 workshops, AgriFood Skills Australia undertook two formal surveys, one targeting VET sector professionals the other aimed at industry. A total of 256 responses were received from a mixture of industry bodies, individual enterprises, training providers and service providers. A further channel for input was through a written online submission process which enabled stakeholders to expand upon their own views or send reports, research papers and any published articles they believed important to factor into the Scan.

Notification of workshops and surveys were distributed through individual invitations, email, database and social media.

TRIANGULATION

In addition to our face to face consultations and surveys, and to ensure we test our assumptions, AgriFood Skills Australia undertakes an extensive desktop analysis of national and international trends and industry developments. We also draw on advice and feedback gathered throughout the year during the continuous improvement of Training Packages and workforce development activities.


Jasper C, 31 December (2014), Agricultural exporters making millions from lower Australian dollar, Australian Broadcasting Corporation, Ultimo

McHugh B, 1 January (2015), Farming optimism for 2015: trade agreements, low Australian dollar bring expectations of premium prices, Australian Broadcasting Corporation, Ultimo


Noonan P et all (2014) Expenditure on education and training in Australia – Analysis and background paper, Mitchell Institute, Melbourne

Policy Horizons Canada (2014), MetaScan 3: Emerging technologies, Government of Canada


South Australian Government (2014), South Australia - the place where people and business thrive, SA Government, Adelaide

Victorian Government (2014), Food to Asia Action Plan – Putting Victorian food and beverages on Asian tables, Melbourne


Department of Employment (2014) Industry Outlook: Agriculture, Forestry and Fishing, Canberra

McKinna et al (2014), Agribusiness briefing paper for Loddon Mallee RDA, Melbourne

World Economic Forum [2015] Industrial Internet of Things: Unleashing the Potential of Connected Products and Services, WEF, Geneva


National Farmers’ Federation (2014) Submission to Skilled Occupation List (SOL) 2015-2016, NFF, Canberra

APPENDIX C
OCCUPATIONS AND QUALIFICATIONS IN DEMAND

IMPORTANT – BEFORE CONSIDERING THIS ADVICE

The following table is a mandated requirement of the Environmental Scan. It distills industry’s advice on skill needs into guidance for the training system on occupations in demand and the corresponding Training Package qualification(s).

Agrifood comprises 43 sectors with over 100 sub-sectors. Businesses are based in metropolitan, regional, remote and rural Australia and in several sectors, involve a large seasonal or contract based workforce. It makes the notion of a definitive listing of ‘occupations in demand’ unrealistic and potentially misleading.

A further tension is the requirement to align this advice to full qualifications – the currency by which the national training system typically plans and funds public provision but which continues to sit at odds with the incremental learning culture prevalent in most sectors. Consultations for the 2015 Environmental Scan have again confirmed industry’s need for widespread delivery of Skills Sets and individual units of competency. It is a request reinforced by a number of Australia’s key strategic agendas – widespread adoption of technology, sustainable practice, strong biosecurity, improved animal welfare and water management – all of which necessitate new skills and knowledge within the workforce but which rarely require a full qualification.

Presenting advice on occupational demand is further complicated by the need to use ANZSCO coding, the role of which is to define jobs and occupations according to the level of skill and specialisation. Rapid and ongoing evolution of many agrifood job roles has left several ANZSCO classifications failing to keep pace with the higher skill levels at which these roles now sit. Several emerging job roles key to industry’s future, such as irrigation designers and animal technicians, fall into amorphous ANZSCO categories which make even harder the identification of workforce numbers and extent of the training response required.

To better reflect the actual job role in demand, an additional column has therefore been added to the following table and uses terminology more easily recognised by industry. The table also flags where a discrepancy of skill level and/or definition exists.

It is strongly recommended that the following advice is used as part of a deeper conversation within industry sub-sectors, local regions and individual enterprises.
<table>
<thead>
<tr>
<th>ANZSCO Code</th>
<th>ANZSCO Occupation Title</th>
<th>Recognised Job Role</th>
<th>Qualifications</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>133512</td>
<td>Production Manager</td>
<td>Meat Processing Plant and Line Manager (closest ANZSCO alignment) Meat Processing Supervisor (closest ANZSCO alignment)</td>
<td>MTM50111 Diploma of Meat Processing MTM60111 Advanced Diploma of Meat Processing MTM40111 Certificate IV in Meat Processing (Leadership)</td>
<td>Ongoing demand for upskilling of existing workers in supervision, quality assurance and leadership skills. Demand growing due to increasing requirements from domestic and international markets, and criticality of meeting quality standards.</td>
</tr>
<tr>
<td>351211</td>
<td>Butchers or Smallgoods Makers</td>
<td>Butcher Smallgoods Maker</td>
<td>MTM30813 Certificate III in Meat Processing (Retail Butcher) MTM30911 Certificate III in Meat Processing (Smallgoods - General) MTM31011 Certificate III in Meat Processing (Smallgoods - Manufacture)</td>
<td>Long standing national shortage. Continuing high demand for new entrants and existing worker training in response to ageing worker profile and shortage of tradespeople. Formally recognised shortage by majority of jurisdictions and confirmed in the last seven Environmental Scans. Listed on the Consolidated Sponsored Occupations List (CSOL)</td>
</tr>
<tr>
<td>599599</td>
<td>Inspectors and Regulatory Officers nec</td>
<td>Animal Welfare Officer (closest ANZSCO alignment)</td>
<td>Animal Welfare Officer Skill Set</td>
<td>Ongoing demand and confirmed through consultations as high priority, critical to implementation of whole-of-chain consistent practices in animal welfare and low-stress animal handling.</td>
</tr>
<tr>
<td>831211</td>
<td>Meat Boner and Slicer</td>
<td>Boner Slicer</td>
<td>MTM30111 Certificate III in Meat Processing (Boning Room)</td>
<td>Ongoing demand for existing worker training nationally in response to ageing worker profile and shortage of tradespeople and growing trend towards larger, consolidated bulk processing enterprises.</td>
</tr>
<tr>
<td>831212</td>
<td>Slaughterer</td>
<td>Slaughterer</td>
<td>MTM30511 Certificate III in Meat Processing (Slaughtering)</td>
<td>Ongoing demand for existing worker training nationally in response to ageing worker profile and shortage of tradespeople.</td>
</tr>
<tr>
<td>8393</td>
<td>Product Quality Controller</td>
<td>Quality Assurance Personnel Meat Carcase Assessor</td>
<td>MTM30611 Certificate III in Meat Processing (General) MTM40311 Certificate IV in Meat Processing (Quality Assurance)</td>
<td>Ongoing high demand for existing workers through employment-based training pathway. Demand growing due to increasing requirements from domestic and international markets, restructuring of the regulatory environment and criticality of meeting quality standards.</td>
</tr>
<tr>
<td>841599</td>
<td>Livestock Farm Worker nec</td>
<td>Stock Handler (closest ANZSCO alignment) Lairage Manager (closest ANZSCO alignment)</td>
<td>Meat Processing Livestock Handler Skill Set Lairage Supervisor Skill Set</td>
<td>Confirmed through consultations as high priority, critical to implementation of whole-of-chain consistent practices in animal welfare and low-stress animal handling.</td>
</tr>
<tr>
<td>851299</td>
<td>Food Trades Assistant nec</td>
<td>Butchers Assistant</td>
<td>MTM20311 Certificate II in Meat Processing (Meat Retailing) MTM20411 Certificate II in Meat Processing (Food Services)</td>
<td>Medium level demand for new entrants and existing workers.</td>
</tr>
<tr>
<td>ANZSCO Code</td>
<td>ANZSCO Occupation Title</td>
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<td>Qualifications</td>
<td>Justification</td>
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</tr>
<tr>
<td>361111</td>
<td>Dog Trainer and Handler</td>
<td>Greyhound Racing Owner/ Trainer</td>
<td>RGR20213 Certificate II in Racing (Greyhound)</td>
<td>Increased alignment of licensing and registration to qualifications is seeing a growing demand for training of existing owners, breeders and dog attendants. Listed on the Consolidated Sponsored Occupations List (CSOL) Identified in Greyhounds Australasia’s Greyhound National Welfare Strategy</td>
</tr>
<tr>
<td>36112</td>
<td>Horse Trainer</td>
<td>Horse Trainer</td>
<td>RGR40108 Certificate IV in Racing (Racehorse Trainer) RGR50108 Diploma of Racing (Racehorse Trainer)</td>
<td>Increased alignment of licensing and registration to qualifications is seeing a growing demand for training. Decline in numbers over the last decade is cited as the trigger for demand for new entrants. Identified by the NFF in its 2014 submission on the Skilled Occupation List (SOL) Listed on the Consolidated Sponsored Occupations List (CSOL)</td>
</tr>
<tr>
<td>362311</td>
<td>Greenkeeper</td>
<td>Track Maintenance Worker (closest ANZSCO alignment)</td>
<td>RGR20408:Certificate II Racing Services (Track Maintenance) RGR30508:Certificate III Racing Services (Track Maintenance)</td>
<td>Ongoing shortages across all three racing codes for track maintenance workers compounded by existing shortages in broader landscaping/ gardening sector for skilled workers. Listed on the Consolidated Sponsored Occupations List (CSOL)</td>
</tr>
<tr>
<td>452318</td>
<td>Dog or Horse Racing Official</td>
<td>Race Steward Handicapper (Racing) Racing Administrator Chief Steward</td>
<td>RGR40608 Certificate IV in Racing Services (Steward) RGR40508 Certificate IV in Racing Services (Racing Administration) RGR50308 Diploma of Racing Services (Steward)</td>
<td>Ageing workforce is contributing to an ongoing shortage of new entrants. Listed on the Consolidated Sponsored Occupations List (CSOL)</td>
</tr>
<tr>
<td>452413</td>
<td>Jockey</td>
<td>Jockey Harness Driver</td>
<td>RGR40208 Certificate IV in Racing (Jockey) RGR40308 Certificate IV in Racing (Harness Race Driver)</td>
<td>Long standing national shortage confirmed through industry consultations for the last seven Environmental Scans. Listed on the Consolidated Sponsored Occupations List (CSOL)</td>
</tr>
<tr>
<td>841516</td>
<td>Stablehand</td>
<td>Stablehand Trackrider</td>
<td>RGR20108 Certificate II in Racing (Stablehand) RGR30108 Certificate III in Racing (Trackrider)</td>
<td>Long standing national shortage confirmed through industry consultations for the last seven Environmental Scans. Increased alignment of licensing and registration to qualifications is seeing a growing demand for training.</td>
</tr>
</tbody>
</table>
## FOOD PROCESSING INDUSTRY

<table>
<thead>
<tr>
<th>ANZSCO Code</th>
<th>ANZSCO Occupation Title</th>
<th>Recognised Job Role</th>
<th>Qualifications</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>234212</td>
<td>Food Technologist</td>
<td>Food Technologist</td>
<td>FDF40311 Certificate IV in Food Science and Technology FDF50311 Diploma in Food Science and Technology</td>
<td>Ongoing shortages cited by enterprises and industry bodies, and set to increase due to growing pressure for innovative products. Relatively small numbers – industry is yet to match stated levels of demand with widespread job opportunities. Listed on the Consolidated Sponsored Occupations List (CSOL)</td>
</tr>
<tr>
<td>251311</td>
<td>Environmental Health Officer</td>
<td>Food Safety Auditor, Food Safety Officer</td>
<td>FDF40110 Certificate IV in Food Processing FDF30111 Certificate III in Food Processing</td>
<td>Increasing regulation, biosecurity and licensing driving increased demand. Confirmed with industry bodies and identified at state level.</td>
</tr>
<tr>
<td>351111</td>
<td>Bakers</td>
<td>Baker</td>
<td>FDF30610 Certificate III in Retail Baking [Bread] FDF30710 Certificate III in Retail Baking [Combined]</td>
<td>Long standing national shortage confirmed through industry consultations for the last seven Environmental Scans. Listed on the Consolidated Sponsored Occupations List (CSOL)</td>
</tr>
<tr>
<td>351112</td>
<td>Pastrycooks</td>
<td>Pastrycook</td>
<td>FDF30510 Certificate III in Retail Baking [Cake and Pastry]</td>
<td>Long standing national shortage confirmed through industry consultations for the last seven Environmental Scans. Listed on the Consolidated Sponsored Occupations List (CSOL)</td>
</tr>
<tr>
<td>831111</td>
<td>Baking Factory Worker</td>
<td>Bakery Worker</td>
<td>FDF20111 Certificate II in Food Processing FDF30310 Certificate III in Plant Baking</td>
<td>National and long standing shortage continues to be reported by industry bodies.</td>
</tr>
<tr>
<td>831114</td>
<td>Dairy Products Maker</td>
<td>Cheese Maker</td>
<td>FDF30111 Certificate III in Food Processing</td>
<td>Regional needs in South Australia and Victoria identified in consultations.</td>
</tr>
<tr>
<td>ANZSCO Code</td>
<td>ANZSCO Occupation Title</td>
<td>Recognised Job Role</td>
<td>Qualifications</td>
<td>Justification</td>
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<tr>
<td>121111</td>
<td>Aquaculture Farmer</td>
<td>Fish Farmer</td>
<td>Higher Education – marine science/aquaculture</td>
<td>Regional shortages cited with growth planned of new and existing operations in Queensland, New South Wales and Tasmania. Need is small in number but critical in occupational terms.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hatchery Manager</td>
<td>SFI40111 Certificate IV in Aquaculture</td>
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<td></td>
<td></td>
<td></td>
<td>SFI50111 Diploma of Aquaculture</td>
<td>Identified by the NFF in its 2014 submission on the Skilled Occupation List (SOL)</td>
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<td>Listed on the Consolidated Sponsored Occupations List (CSOL)</td>
</tr>
<tr>
<td>139912</td>
<td>Environmental Manager</td>
<td>Environmental</td>
<td>SFI40311 Certificate IV in Seafood Industry (Environmental Management)</td>
<td>Confirmed through consultations, further reinforced by the policy targets for skill development of existing fishing crews in improved sustainability practices. Numbers of full qualifications is projected to be small, demand for Skill Sets in this area projected to be high.</td>
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<td>/Sustainability</td>
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<td>Listed on the Consolidated Sponsored Occupations List (CSOL)</td>
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<tr>
<td></td>
<td></td>
<td>Manager</td>
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<tr>
<td>231211</td>
<td>Master Fisher Skipper</td>
<td>Skipper 3/ Master 5</td>
<td>Sourced from the Maritime Training Package:</td>
<td>Persistent regional shortages cited as aquaculture sector moves into larger vessels. Competition with local oil and gas projects for licensed crews still exists and is compounded by global shortage and ageing/retirement of existing workforce.</td>
</tr>
<tr>
<td></td>
<td>4/ Master 4</td>
<td>Master 4</td>
<td>MAR20307 Certificate II in Maritime Operations (Coxswain)</td>
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</tr>
<tr>
<td></td>
<td>Chesty 3, 2 and 1</td>
<td>Coxswain Grade 1</td>
<td>MAR20313 Certificate II in Maritime Operations (Coxswain Grade I coastal)</td>
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</tr>
<tr>
<td></td>
<td>(closest ANZSCO alignment)</td>
<td></td>
<td>MAR30913 Certificate III in Maritime Operations (Master up to 24 metres Coastal)</td>
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<tr>
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<td></td>
<td>MAR30413 Certificate III in Maritime Operations (Master up to 24 metres Coastal)</td>
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<td></td>
<td>MAR40613 Certificate IV in Maritime Operations (Master up to 35 metres Coastal)</td>
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<td></td>
<td></td>
<td></td>
<td>MAR40313 Certificate IV in Maritime Operations (Master up to 35 metres Coastal)</td>
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<tr>
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<td></td>
<td>plus Fishing Operations Skill Set</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>SFI40211 Certificate IV in Fishing Operations</td>
<td></td>
</tr>
<tr>
<td>311413</td>
<td>Life Science Technician</td>
<td>Hatchery Technician</td>
<td>Higher Education – marine science/aquaculture</td>
<td>Regional shortages cited with growth planned of new and existing operations in Queensland, Western Australia and Tasmania. Need is small in number but critical in occupational terms.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(closest ANZSCO alignment)</td>
<td>SFI40111 Certificate IV in Aquaculture</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>SFI50111 Diploma of Aquaculture</td>
<td>Hatchery Technician identified by the NFF in its 2014 submission on the Skilled Occupation List (SOL)</td>
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<tr>
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<td>Listed on the Consolidated Sponsored Occupations List (CSOL)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mariculture Technician</td>
<td></td>
<td></td>
</tr>
<tr>
<td>621111</td>
<td>Sales Assistant</td>
<td>Seafood Sales Worker</td>
<td>SFI130611 Certificate III in Seafood Sales and Distribution</td>
<td>Regional shortages cited in addition to existing worker skill shortages in the areas of food safety and handling/hazard analysis and critical control points, auditing and certification.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>SFI140611 Certificate IV in Seafood Sales and Distribution</td>
<td></td>
</tr>
<tr>
<td>ANZSCO Code</td>
<td>ANZSCO Occupation Title</td>
<td>Recognised Job Role</td>
<td>Qualifications</td>
<td>Justification</td>
</tr>
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</tr>
<tr>
<td>712911</td>
<td>Boiler or Engine Operator</td>
<td>Marine Engine Driver Grade 3, 2 and 1</td>
<td>Sourced from the Maritime Training Package: MAR20213 Certificate II in Maritime Operations (Marine Engine Driver Grade 3) MAR30213 Certificate III in Maritime Operations (Marine Engine Driver Grade 2) MAR40213 Certificate IV in Maritime Operations (Marine Engine Driver Grade 1)</td>
<td>Persistent regional shortages cited with industry recruiting from overseas. Competition with local oil and gas projects for licensed crews still exists and is compounded by global shortage and ageing/retirement of existing workforce. Identified by the NFF in its 2014 submission on the Skilled Occupation List (SOL)</td>
</tr>
<tr>
<td>841111</td>
<td>Aquaculture Worker</td>
<td>Fish Farm Worker Mariculture Worker</td>
<td>SFI30111 Certificate III in Aquaculture Processing</td>
<td>Ongoing regional shortages and cited as constraint to industry growth. Regional shortages cited with growth planned of new and existing operations in Queensland, Western Australia and Tasmania.</td>
</tr>
<tr>
<td>899212</td>
<td>Fishing Hand</td>
<td>Fisherman Prawn Trawler Hand Purse Seining Hand</td>
<td></td>
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</tr>
</tbody>
</table>
AGRICULTURE, HORTICULTURE, ANIMAL CARE, CONSERVATION AND LAND MANAGEMENT

<table>
<thead>
<tr>
<th>ANZSCO Code</th>
<th>ANZSCO Occupation Title</th>
<th>recognised Job Role</th>
<th>Qualifications</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>121</td>
<td>Farmers and Farm Managers</td>
<td>Mixed Crop Farmer, Crop and Livestock Farmer, Livestock Farmer, Stud Beef Cattle Farmer, Dairy Farmer, Cotton Grower</td>
<td>AHC50110 Diploma of Agriculture, AHC51410 Diploma of Agribusiness Management, AHC60110 Advanced Diploma of Agriculture, AHC60310 Advanced Diploma of Agribusiness Management, MTM70111 Graduate Certificate in Agribusiness, MTM80111 Graduate Diploma of Agribusiness</td>
<td>Evolving nature of farming into rural business driving widespread need for improved management skills in existing owners and managers. New skills required across farming specialisations (mixed crop and livestock) in response to major policy initiatives in areas such as water management, animal welfare and biosecurity. Identified by the NFF in its 2014 submission on the Skilled Occupation List (SOL) Listed on the Consolidated Sponsored Occupations List (CSOL)</td>
</tr>
<tr>
<td>121218</td>
<td>Turf Grower</td>
<td>Turf Farmer</td>
<td>AHC51010 Diploma of Sports Turf Management</td>
<td>Ongoing skilled labour shortages cited by the industry. Confirmed through 2015 survey responses and consultation workshops. Identified by the NFF in its 2014 submission on the Skilled Occupation List (SOL) Listed on the Consolidated Sponsored Occupations List (CSOL)</td>
</tr>
<tr>
<td>121311</td>
<td>Apiarist</td>
<td>Beekeeping</td>
<td>AHC32010 Certificate III in Beekeeping</td>
<td>Core role to enable pollination of horticultural crops and to increase yields. Small ageing workforce in need of urgent upskilling in addition to providing skills development pathways to attract new entrants. Confirmed through 2015 survey responses. Listed on the Consolidated Sponsored Occupations List (CSOL)</td>
</tr>
<tr>
<td>121316</td>
<td>Horse Breeder</td>
<td>Horse Stud Manager, Stud Master/Mistress</td>
<td>AHC30310 Certificate III in Horse Breeding, AHC50110 Diploma of Agriculture</td>
<td>Regional shortages cited and confirmed in consultations. Listed on the Consolidated Sponsored Occupations List (CSOL)</td>
</tr>
<tr>
<td>121318</td>
<td>Pig Farmer</td>
<td>Pig Farm Manager, Pig Breeder</td>
<td>AHC30410 Certificate III in Pork Production, AHC50210 Diploma of Pork Production</td>
<td>Changing practices in animal handling and welfare, and meat safety and quality are driving increased need for skill development of existing managers and workers. The pork industry faces long-standing critical skilled labour shortages. Identified by Pork Australia Limited and identified by the NFF in its 2014 submission on the Skilled Occupation List (SOL) Listed on the Consolidated Sponsored Occupations List (CSOL)</td>
</tr>
<tr>
<td>234111</td>
<td>Agricultural Consultant</td>
<td>Agricultural Adviser, Agricultural Extension Officer, Landcare Officer, Irrigation Designer, Irrigation Manager</td>
<td>AHC60110 Advanced Diploma of Agriculture, AHC60310 Advanced Diploma of Agribusiness Management, AHC50110 Diploma of Agriculture, AHC51210 Diploma of Community Coordination and Facilitation, AHC51110 Diploma of Conservation and Land Management, AHC51610 Diploma of Irrigation Management</td>
<td>Use of agricultural consultants is widespread with views that this will increase with changes to business models whereby farms are contracting key areas of technical and professional expertise on an as-needs basis. Irrigation design and management remain pivotal occupations in transforming industry and will be fundamental to development of Northern Australia. Refer to Green Paper. Identified by the NFF in its 2014 submission on the Skilled Occupation List (SOL) Listed on the Consolidated Sponsored Occupations List (CSOL)</td>
</tr>
<tr>
<td>234112</td>
<td>Agricultural Scientist</td>
<td>Agronomist</td>
<td>Sourced from Higher Education sector AHC60110 Advanced Diploma of Agriculture, AHC50110 Diploma of Agriculture</td>
<td>Long standing national shortage of agronomists leading to recruitment from overseas. Confirmed through consultations and cited in multiple industry and government reports and inquiries. Growing demand for graduates to undertake Diploma or Advanced Diploma of Agriculture to gain ‘hands on’ experience and for degree offerings to become far more integrated into real work. Identified by the NFF in its 2014 submission on the Skilled Occupation List (SOL) Listed on the Consolidated Sponsored Occupations List (CSOL)</td>
</tr>
</tbody>
</table>
### AGRICULTURE, HORTICULTURE, ANIMAL CARE, CONSERVATION AND LAND MANAGEMENT (CONTINUED)

<table>
<thead>
<tr>
<th>ANZSCO Code</th>
<th>ANZSCO Occupation Title</th>
<th>Recognised Job Role</th>
<th>Qualifications</th>
<th>Justification</th>
</tr>
</thead>
</table>
| 234311      | Conservation Officer          | Environmental Officer                   | AHC51110 Diploma of Conservation and Land Management  
               |                               | Landcare Facilitator            | AHC60410 Advanced Diploma of Conservation and Land Management  
               |                               | Indigenous Land Management Officer | AHC31510 Certificate III in Indigenous Land Management  
               |                               | Landcare Worker                | AHC32513 Certificate III in Aboriginal-Sites Work  
               |                               | (closest ANZSCO alignment)     | AHC21010 - Certificate II in Conservation and Land Management | Australia’s broader commitment to improved Natural Resource Management contributes to an increasing demand. Further demand is flagged through restorative work pre, during and post resource development projects in regional Australia. Listed on the Consolidated Sponsored Occupations List (CSOL)  
               |                               |                                        |                                                                              | Strong demand evidenced in the 2015 survey responses and consultation workshops for bush regeneration and environmental restoration more broadly.                                                                 |
| 234399      | Environmental Scientist nec   | Soil Scientist                          | Sourced from the Higher Education sector | Soil science and management remain pivotal occupations in enabling development of Northern Australia. Refer to Green Paper. Listed on the Consolidated Sponsored Occupations List (CSOL)  |
| 234314      | Park Ranger                   | Environment, Parks and Landcare Manager | AHC51110 Diploma of Conservation and Land Management  
               |                               | (Skill alignment issue)         | AHC60410 Advanced Diploma of Conservation and Land Management | Localised shortages expected to increase in line with growth of urban development and surrounding parklands. Listed on the Consolidated Sponsored Occupations List (CSOL)  |
| 234711      | Veterinarian                  | Large Animal Vet                        | Sourced from the Higher Education sector | Regional and localised rural shortages cited and confirmed in consultations for veterinarians specialising in large animals. Listed on the Consolidated Sponsored Occupations List (CSOL)  |
| 311111      | Agricultural Technician       | Agricultural Technical Officer          | AHC40110 Certificate IV in Agriculture  
               |                               | Agricultural Laboratory Technician | AHC40310 Certificate IV in Production Horticulture  
               |                               | Artificial Insemination Technical Officer | AHC41512 Certificate IV in Seed Testing  
               |                               | Dairy Technician               | AHC30110 Certificate III in Agriculture (Dairy Production)  
               |                               | Poultry Technical Officer      | AHC30210 Certificate III in Agriculture (Poultry Production)  
               |                               | Herd Tester                   | AHC30510 Certificate III in Poultry Production  
               |                               | Field Crop Technical Officer   | AHC 33512 Certificate III in Seed Testing  
               |                               | Horticultural Technical Officer | Seed Crop Field Inspector Skill Set  
               |                               | Piggery Technician            | AHC30410 Certificate II in Pork Production | National shortage of agricultural technicians resulting in recruitment from overseas. Strong demand forecast reflective of industry shift to more technical/para-professional roles across sectors to enable ‘precision farming’. ‘Animal Technician’ nominated by the NFF in its 2014 submission on the Skilled Occupation List (SOL)  
               |                               |                                        |                                                                              | Listed on the Consolidated Sponsored Occupations List (CSOL)  
<pre><code>           |                               |                                        |                                                                              | Identified by Pork Australia Limited and by the NFF in its 2014 submission on the Skilled Occupation List (SOL)  |
</code></pre>
<p>| 322113      | Farrier                       | Farrier                                 | ACM30510: Certificate III in Farriery | Regional skill shortages cited by both the racing industry and the horse breeding industry. Identified by the NFF in its 2014 submission on the Skilled Occupation List (SOL) Listed on the Consolidated Sponsored Occupations List (CSOL)  |</p>
<table>
<thead>
<tr>
<th>ANZSCO Code</th>
<th>ANZSCO Occupation Title</th>
<th>Recognised Job Role</th>
<th>Qualifications</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>361211</td>
<td>Shearer</td>
<td>Shearing contractor</td>
<td>AHC32910 Certificate III in Shearing</td>
<td>Regional and seasonal shortages as confirmed in state skill reports and identified by Wool Producers Australia. Listed on the Consolidated Sponsored Occupations List (CSOL).</td>
</tr>
<tr>
<td>362212</td>
<td>Arborist</td>
<td>Arborist</td>
<td>AHC30810 Certificate III in Arboriculture</td>
<td>Widespread ongoing shortages at a national level in addition to recently introduced codes of practice which have created a need for formal training. Strong demand evidenced in the 2015 survey responses and consultation workshops. Listed on the Consolidated Sponsored Occupations List (CSOL).</td>
</tr>
<tr>
<td>362213</td>
<td>Landscape Gardener</td>
<td>Landscaper</td>
<td>AHC30910 Certificate III in Landscape Construction</td>
<td>Localised shortages reported and specific shortages of experienced workers with high level structural landscaping and supervisory skills. New and emerging skills in high rise green walling and rooftop gardens. Strong demand evidenced in the 2015 survey responses and consultation workshops. Listed on the Consolidated Sponsored Occupations List (CSOL).</td>
</tr>
<tr>
<td>362411</td>
<td>Nursery Person</td>
<td>Production Nursery Supervisor</td>
<td>AHC31110 Certificate III in Production Nursery AHC31210 Certificate III in Retail Nursery</td>
<td>Existing shortage expected to increase in line with growth of urban development and surrounding parklands. Listed on the Consolidated Sponsored Occupations List (CSOL).</td>
</tr>
<tr>
<td>ANZSCO Code</td>
<td>ANZSCO Occupation Title</td>
<td>Recognised Job Role</td>
<td>Qualifications</td>
<td>Justification</td>
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<td>-------------</td>
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<td>---------------</td>
</tr>
<tr>
<td>399917</td>
<td>Woolclasser</td>
<td>Woolclasser</td>
<td>AHC41313 Certificate IV in Wool Classing</td>
<td>Regional and seasonal shortages as confirmed in state skill reports and identified by Wool Producers Australia. Listed on the Consolidated Sponsored Occupations List (CSOL).</td>
</tr>
<tr>
<td>399999</td>
<td>Technicians and Trades Workers nec</td>
<td>Irrigation Technician (Closest ANZSCO alignment)</td>
<td>AHC32412 Certificate III in Irrigation</td>
<td>Ongoing shortages of technicians cited by enterprises and industry bodies particularly in relation to irrigation design and modernisation of systems. Demand projected to increase due to natural resource management, lifting yields and sustainability pressures more broadly, and the implementation of reforms from the Murray Darling Basin Plan for irrigation infrastructure projects. Identified by the NFF in its 2014 submission on the Skilled Occupation List (SOL).</td>
</tr>
<tr>
<td>399999</td>
<td>Technicians and Trades Workers nec</td>
<td>Equine Dentist (Closest ANZSCO alignment)</td>
<td>ACM40512 Certificate IV in Equine Dentistry</td>
<td>Regional shortages cited and reflected in 2015 survey responses.</td>
</tr>
<tr>
<td>721111</td>
<td>Agricultural and Horticultural Mobile Plant Operators</td>
<td>Cotton Picking Machine Operator Harvester Operator Rotary Hoe Operator</td>
<td>AHC32610 Certificate III in Rural Machinery Operations</td>
<td>Persistent shortages of regionally located mobile plant operators and drivers cited as a consequence of skilled labour drifting to the resource sectors, particularly felt in areas where the industries are co-located with employers reportedly recruiting from overseas. Deemed a critical occupation by industry. Identified by the NFF in its 2014 submission on the Skilled Occupation List (SOL).</td>
</tr>
<tr>
<td>831312</td>
<td>Poultry Process Worker</td>
<td>Poultry Boner Poultry Slaughterer</td>
<td>AHC20210 Certificate II in Poultry Production Operations</td>
<td>Changing practices in animal handling and welfare will drive increased need for skill development of existing workers.</td>
</tr>
<tr>
<td>841412</td>
<td>Horticultural Nursery Assistant</td>
<td>Nursery Assistant</td>
<td>AHC20710 Certificate II in Production Nursery AHC20810 Certificate II in Retail Nursery</td>
<td>Existing shortage expected to increase in line with growth of urban development and surrounding parklands.</td>
</tr>
<tr>
<td>841214</td>
<td>Vegetable Farm Worker</td>
<td>Farmhand</td>
<td>AHC20310 Certificate II in Production Horticulture</td>
<td>Ongoing shortages of new entrants and skill development needs of existing workers driving demand for skill development. Strong demand evidenced in the 2015 survey responses and consultation workshops.</td>
</tr>
<tr>
<td>841511</td>
<td>Beef Cattle Farm Worker</td>
<td>Farmhand (livestock)</td>
<td>AHC20110 Certificate II in Agriculture</td>
<td>Changing practices in animal handling and welfare will drive increased need for skill development of existing workers.</td>
</tr>
<tr>
<td>841512</td>
<td>Dairy Cattle Farm Worker</td>
<td>Farmhand (dairy)</td>
<td>AHC20110 Certificate II in Agriculture</td>
<td>Changing practices in animal handling and welfare will drive increased need for skill development of existing workers.</td>
</tr>
<tr>
<td>841513</td>
<td>Mixed Livestock Farm Worker</td>
<td>Farmhand (livestock)</td>
<td>AHC20110 Certificate II in Agriculture</td>
<td>Changing practices in animal handling and welfare will drive increased need for skill development of existing workers.</td>
</tr>
<tr>
<td>841515</td>
<td>Sheep Farm Worker</td>
<td>Farmhand (sheep)</td>
<td>AHC20110 Certificate II in Agriculture</td>
<td>Changing practices in animal handling and welfare will drive increased need for skill development of existing workers.</td>
</tr>
<tr>
<td>841517</td>
<td>Shearer Shed Hand</td>
<td>Shed Hand</td>
<td>AHC21410 Certificate II in Wool Handling</td>
<td>Regional and seasonal shortages as confirmed in state skill reports and identified by Wool Producers Australia.</td>
</tr>
<tr>
<td>841599</td>
<td>Livestock Farm Workers nec</td>
<td>Piggery Worker</td>
<td>AHC20110 Certificate II in Agriculture</td>
<td>Changing practices in animal handling and welfare will drive increased need for skill development of existing workers.</td>
</tr>
<tr>
<td>841611</td>
<td>Mixed Crop and Livestock Worker</td>
<td>Farmhand</td>
<td>AHC20110 Certificate II in Agriculture</td>
<td>Ongoing shortages of new entrants and skill development needs of existing workers driving demand for skill development.</td>
</tr>
</tbody>
</table>