

AGRIFOOD  
SKILLS AUSTRALIA



# 2011 ENVIRONMENTAL SCAN

of the agrifood industry

Australia's Regions:  
Australia's Future



**ISSN 1835-7539**

AgriFood Skills Australia Ltd  
(Incorporated in the Australian Capital Territory as a company  
limited by guarantee)

ABN 56 109 613 256

**Mailing address:**

PO Box 5450

Kingston ACT 2604

P: 02 6163 7200

F: 02 6162 0610

E: [reception@agrifoodskills.net.au](mailto:reception@agrifoodskills.net.au)

[www.agrifoodskills.net.au](http://www.agrifoodskills.net.au)



**Australian Government**

**Department of Education, Employment  
and Workplace Relations**

The Environmental Scan of the agrifood industry has been produced with the assistance of funding provided by the Commonwealth Government through the Department of Education, Employment and Workplace Relations.

# CONTENTS

Introduction and Key Messages from the Chairman	iii
<b>SECTION 1</b> Latest Industry Intelligence	1
Macro Factors	1
Micro Factors	7
Market Factors	13
<b>SECTION 2</b> Identified Workforce Development Needs	22
<b>SECTION 3</b> Current Impact of Training Packages	24
<b>SECTION 4</b> Future Directions for Endorsed Components of AgriFood Training Packages	27
<b>APPENDIX A</b> Continuous Improvement of Training Packages over the Previous 12 Months	30
<b>APPENDIX B</b> Methodology and Bibliography	32
<b>APPENDIX C</b> Occupations and Qualifications in Demand	35

# THE ENVIRONMENTAL SCAN: WHAT IT IS, AND WHAT IT ISN'T ...

Unforeseen and calamitous events such as the global financial crisis and more recently the 2011 floods, have economists and policymakers recognising the limited relevance of historical trends and data as a reliable indicator of the future. Looking to the past is particularly unhelpful when attempting to predict industry's future workforce and skill development needs, most especially as we head into a period without precedent, where whole sectors are changing and job roles transforming due to the need for sustainable living.

Leading nations of the *Organisation for Economic Co-operation and Development* (OECD) are shifting their focus to 'early warning systems' which detect the onset of trends and building agile education and training systems capable of responding once issues are identified. Environmental Scans have been conceived on this basis.

Based on real-time industry views and evidence from across the country, AgriFood Skills Australia's fourth Environmental Scan aims to give readers a clear understanding of the factors currently shaping and impacting on agrifood workforce development and how well the training system, its products and services, and industry itself are responding.

**Grass roots insight and immediacy of industry intelligence are what sets the Scan apart from other reports in the education and training system.**

For this reason, the Scan *does not* focus on already published statistics and economic analyses found elsewhere which, by their very nature, are typically historical. Rather, it draws on a range of topical sources such as the latest industry, enterprise and government research and publications, international developments, media releases, current affairs programs and most importantly, from on-going visits and conversations with those doing the jobs, throughout the country and across our sectors, and who continue to experience firsthand the issues needing to be written about.

**The Scan is intended to inform a wide audience, including Skills Australia, the Department of Education, Employment and Workplace Relations, industry bodies and the broader training system. It supplements AgriFood Skills Australia's extensive annual workplan and its role as the nation's peak independent body on skills and workforce development for the industry.**



It comprises 99 per cent of Australia's landmass, ranges from remote communities to rural towns and cities, from the northern tropics to the temperate south, and from island territories to scorched, mineral-rich zones. **'It' is regional Australia, home to 7.7 million people and the source of two-thirds of the country's export earnings** - a place some may view as symbolic of the past, but which is set to secure our future.

Unashamedly, and many would argue belatedly, regional Australia has assumed the political spotlight. **Demographers now realise the regions' potential carrying capacity for a larger, more geographically dispersed population with resilient, highly productive enterprises and communities.** At the same time, governments are recognising that we, as a country, must build a broader economic base to secure lasting prosperity and that as a world, with global food prices sitting at their highest level in recorded history, food security is paramount.

These agendas converge squarely on the industry we call 'agrifood', comprising over 880,000 workers, 180,000 enterprises, 43 sectors and a combined value nearing \$200b per annum. **It is an industry with untapped, world class potential but major challenges.**

In addition to its economic, regional and strategic credentials, **agrifood is inseparable from Australia's goal of sustainable development.** As frontline custodians of over 60 per cent of our landmass and the world's third largest fishing zone, our people are fundamental to the Government's new arrangements for biosecurity, its *Caring for our Country* policy, and Australia's

*Biodiversity Conservation Strategy.* Our sectors play a major role in the *National Preventative Health Strategy* in its bid to reduce the incidence of diabetes and obesity, the annual health and social costs of which sit at \$19b.

In a world continuing to struggle to feed itself and despite the devastating impact of the 2011 floods on crops and livestock, **our sectors afford Australia an enviable level of food security.** We grow and produce over 89 per cent of our domestic food supply and export 80 per cent of total gross value. As a new world order emerges in which basic commodities will be the source of enduring security, 2011 will see development of Australia's first ever *National Food Plan* to ensure safe, nutritious and sustainable food supply into the future - echoing calls by the Prime Minister's Science, Engineering and Innovation Council for an *Australian Food Security Agency*<sup>1</sup>.

**Our scientific research base is world class and critical to sustainable productivity growth across all of our sectors.** In Australia, marine and onshore aquaculture is a rapidly growing part of the commercial sector - 2009 being the first year worldwide aquaculture production matched wildcatch production. On a per capita basis, Australia has arguably the strongest racing industry in the world. It makes the second largest contribution to the world's thoroughbred foal production with significant potential for growth given Australia's world best practice improvements in reproduction technology. Our disease free, high quality produce underpins increasing overseas demand as three billion people move up the global food chain and seek greater quantities of animal protein.

<sup>1</sup> Prime Minister's Science, Engineering and Innovation Council, Dec 2010 - *Australia and Food Security in a Changing World*

Australia is awakening to agrifood's economic and strategic importance. But **any assumption that the explosion in regional-related media coverage has converted to a better understanding of its culture and how to optimise its potential, is misguided.**

In a skills context, there remains a significant disconnect between how regional Australia learns and how the National Training System offers, plans and funds training. **Between 2005 and 2009 agrifood employers recorded dissatisfaction ratings at least double that of other industries.**

In a workforce sense, the **industry faces a looming crisis in several sectors due to ageing of its people, skilled workers exiting to the resource sectors, and poor attraction and retention rates over an extended period** which have left an insufficient pool of young workers. Projections in agriculture speak for themselves: by 2018 over 102,000 of the current labour force - equating to 33.4 per cent - will be aged 65 years and over. A staggering 56.2 per cent of the current workforce will be aged over 55 years. Half of our agricultural scientists are nearing retirement. Quite simply, **we risk waking up to regional Australia's potential just as its workforce becomes depleted beyond critical mass** - suggestions being the tipping point will occur between 2013 - 2018.

Australia's 2010 *Intergenerational Report* sets out the challenge across the population but a comprehensive analysis of agrifood's existing labour force is needed to better understand the implications of ageing on key sectors and job roles. Doing little or nothing is not an option, and while there is no shortage of strategic plans across our many sectors and tiers of government, **AgriFood Skills Australia's work on an overarching National Agrifood Skills and Workforce Development Strategy must assume a newfound urgency.**

### **Woven through industry's demographic challenges are factors driving radical changes to traditional business models**

- the need to reduce emissions ahead of a price on carbon, managing rising energy prices and water costs, using resources more efficiently and ensuring animal welfare. Innovation and quicker adoption of research findings remains paramount in adapting to climate change, reducing inputs, increasing yields and animal performance. Ethical operations and social responsibility are non-negotiable for businesses with 84 per cent of consumers now worried about the environmental impact of their shopping<sup>2</sup>. All of these factors necessitate upskilling of our existing workforce.

Consultation for the 2011 Environmental Scan has confirmed five priority skills and workforce development challenges:

1. Employer culture, regional and industry leadership
2. Attraction of workers
3. Adoption of higher level skills across the workforce
4. Adoption and diffusion of new research findings, innovative practice and technology
5. Workforce retention and effective skills utilisation

AgriFood Skills Australia's 2011 - 2014 *Strategic Directions* will respond directly but these issues necessitate a new mind set and unprecedented collaboration across *all* parties - industry, governments and a re-conceived training system.

**Governments in particular will need to provide flexible enabling policy attuned to how regional Australia lives, learns and works** - and recognition that this *will* be different from our urban counterparts because each region is a unique mix of attributes-economic, social, cultural, natural and historic-all of which combine to shape a region's growth and competitiveness. **We must**

**empower communities - one of the biggest assets that governments have - to build robust skilled workforces through devolved decision making and investment** at key points of intervention, and the appointment of local expert intermediaries who understand that in the regions, skills and workforce development are inextricably linked, and so too must be the solutions.

While the vocational education and training (VET) system did not cause industry's looming skills and manpower deficit, there will be no solution without it, but much work is needed. Agrifood comprises 8.1 per cent of the workforce<sup>3</sup> but 5.7 per cent of publicly funded training effort<sup>4</sup>. With over 57 per cent of agrifood's workforce located in regional Australia, our tertiary system must refocus its efforts. **While VET and industry partnerships exist in several regions, VET is still not a full participant in regional development.**

We, as an industry, must step up and unite in an unprecedented show of leadership to drive cultural change. **Emerging para-professional and technician job roles must be supported by the launch of agrifood cadetships**, sought after by a new generation as a highly respected and vibrant pathway, and used to spearhead dissemination of research findings and new knowledge on the ground. Employment and business management practices must be improved; **managers need to commence the journey towards being 'employers of choice' and create high performing workplaces. Industry peaks and associations will be called upon to become change agents and powerful advocates of skills and workforce development.**

Restricted to 20 core pages, the Scan does not seek to capture every issue from a myriad of sub-sectors or rival futurists' bold predictions. It is only ever a snapshot of a continually evolving picture - a modest but insightful exercise

<sup>2</sup> AFGC 2010 <sup>3</sup> ABS 2009 <sup>4</sup> NCVET 2011

into the pulse of grass roots industry; piecing together people's individual stories into the most contemporary overview of industry's challenges, the impact on its people, productivity and skills base.

Each year, the Scan takes a theme that captures the story at the forefront of industry's minds. Last year's Scan - *A perfect storm of shortages - are we ready?* - outlined the quantum leap in skills needed by our workforce to increase productivity using less land and water, fewer nutrients, diminishing fossil fuels and in a more erratic and warmer climate - challenges which have not abated. **This year, industry's story is of the untapped potential in Australia's regions and communities but which without intervention will be constrained through an ageing workforce.**

Understanding this context well ahead of statistics or headlines is critical to agile, informed decision-making and targeted public investment in skills. In moving forward, three areas for action represent the key messages from this year's Environmental Scan for industry and governments:

- ▶ **Development and adoption of the National AgriFood Skills and Workforce Development Strategy** to support coordinated workforce planning and skills formation across sectors, regions and states. It will lift productivity by instilling the principles of high performing workplaces and drive cultural change through the 'employer of choice' concept; it will build individual enterprise's capability to diagnose workforce development needs against business goals, build its skills base, harness the power of contemporary job design and good work organisation.
- ▶ **Explicit reference to and high prioritisation of regional Australia and its skill needs in the National Agreement for Skills and Workforce Development 2013 - 2016** between the Commonwealth and State and Territory Governments based on industry agreed targets and outcomes for a skilled workforce.

- ▶ **Transformation of VET - its funding models and policy settings - into a contemporary skills and workforce development system** that effectively services regional Australia and pro-actively supports building block approaches to skills development; one that invests as much in building the capability of the enterprise as it does in ensuring competence of the individual; one that promptly diffuses research findings and new knowledge through collaboration with Australia's innovation system.

Recognition of the Scan has grown exponentially each year as governments, industry and the training system understand its intent and value its candour. The quality of advice and insight has only been made possible by those who give freely of their time throughout the consultation process - through formal submissions, interviews, in meetings and conversations during the year.

Throughout this process and our on-going work with industry and the regions, we have heard from proud and passionate trainers; indefatigable communities and local governments; students that live and breathe this industry and who will make impressive future leaders. We have met with CEOs of world class, and in many instances world first operations, and inspiring workers whose love of the job and this industry leaves us utterly convinced of its capacity to build Australia's regions and Australia's future.



**John Baker**  
Chairman, AgriFood Skills Australia  
February 2011

## CASE STUDY

# TAMINMIN COLLEGE AND INDUSTRY: CRITICAL PARTNERS IN REGIONAL AUSTRALIA

### BACKGROUND

Taminmin College, located 40 km south of Darwin, is becoming a critical partner for primary industries in the Northern Territory because of its vocational education and training (VET) courses.

The school is a registered training organisation (RTO) delivering nationally recognised VET qualifications in a range of industries to Taminmin students and other high schools in the regions.

At Taminmin, students can study qualifications from the Rural Production Training Package and can enrol in Certificate I and II in Rural Operations and Certificate I, II and III in Conservation and Land Management.

Training is delivered on the school's 75 hectare mixed produce farm which includes a Brahman cattle stud, a boer goat stud, buffalo steers for export, Australian stock horses, silage and hay production and poultry.

### THE CHALLENGE

One of the biggest challenges for the school has been identifying industry needs so that it can develop students with the right mindset, practices and skills for a career in primary industries.

### SOLUTION

The school consulted extensively with primary industry representatives who were upfront about how the school could do things better. The school's Farm Manager and Rural Training Coordinator, Mr Tony Jensen, said often the school would get feedback that the kids were great, they had a good work ethic but they didn't know how to fence or couldn't ride a horse. He said once the weaknesses were identified, those areas of training were targeted to make them more relevant.

### IMPLEMENTATION

The changes weren't that hard to make. However, Jensen said it did involve a lot of thinking outside the constraints of the school's own 75 ha farm.

For example, in mustering, students were able to learn about how to muster 15 animals on foot. But, when they are on a working property, they need to understand how to deal with much larger mobs of cattle. If there is no foundation theory in the unit about how to do this, they can't apply it in different

situations. So, Jensen said, they not only improved the theory aspects but also gave students the opportunity to develop those skills through practical applications on supporting stations giving them real industry experience.

### OUTCOMES

Taminmin students are highly sought after because of the quality of students the college is building and the respect the school has engendered within industry. All 2010 graduates who completed Certificate III in Agriculture were employed before the end of the calendar year. However, some students had declined employment because they wanted to go on and complete their Certificate IV at an agricultural college.

### CRITICAL SUCCESS FACTORS

The key to having a great relationship with industry has been the quality of the school's trainers, many of whom have been recruited from industry and are essential in giving the school credibility with industry.

According to Luke Bowen, the Executive Director of the Northern Territory Cattlemen's Association, whose members offer work experience to Taminmin students, the school had a clear vision from the start and had driven it hard regardless of the hurdles it faced. Bowen added that the school's focus on giving students hands-on experience was another reason why the school was so highly valued by industry.

### IMPLICATIONS FOR BUSINESS/INDUSTRY

The Taminmin model is well regarded by the NT Government with the college delivering or assisting to deliver the model in many schools across the Territory. Although most industries do not have a culture of linking to schools, it is feasible that this could happen in the longer term because of Taminmin's achievements. Bowen says that for the cattle industry, the Taminmin model means a more skilled and more permanent workforce in the NT which will lead to more productive and efficient businesses and in the longer-term, a viable industry.



Taminmin College student Karina Brink at the Darwin Show, proudly demonstrating the skills acquired from Certificate II in Rural Operations.

## MACRO FACTORS

### ECONOMY

In the aftermath of the global financial crisis, the difference between developed and emerging economies is stark and set to become more evident as governments remove artificial support. 2011 budget cuts and tax increases planned for the rich economies equate to just over one per cent of their combined Gross Domestic Product (GDP) - the biggest collective deficit cut on record. Expectations are that **foreign investment searching for higher yields will flow from America and Europe into 'frontier economies'** in Asia, South America and particularly sub-Saharan Africa - increasingly cited as the 'next big thing' in agrifood.

**Not since 1982 has the Australian dollar been at its current strength** - sporadic parity with the US dollar and strong performance against other currencies poses major challenges for agrifood sectors' competitiveness as net exporters of produce.

Australia's largest free trade agreement - the Association of Southeast Asian Nations (ASEAN) and Australia-New Zealand Free Trade Agreement (AANZFTA) - came into operation in 2010. The Agreement spans 12 economies with over 600 million people and a combined GDP of \$3.1tn. By 2020, the deal will eliminate tariffs on 96 per cent of current exports to ASEAN nations.

While agrifood is viewed by some as a sunset industry, Australian Bureau of Statistics (ABS) research on multifactor productivity states '*For the decade 1998-99 to 2008-09, the most significant growth in productivity occurred in the agriculture, forestry and fishing industry (2.6 per cent per year on average)*'. Most of this period coincided with the 'one in 100 year drought'. During the financial crisis, GDP within food manufacturing grew by 5.4 per cent.

### WORLD POPULATION

In 2011 the world population is projected to reach seven billion. In 1999 it was at six billion. Although the absolute size of the world's population continues to rise, it reflects momentum initiated back in the 1960s and 1970s through high birth rates in the developing countries and the baby boom in Europe and America.

For many years the global fertility rate has been falling - from 4.8 in 1965-70 to 2.6 in 2005-2010. **Half of the world's population now live in countries where fertility rates are at less than replacement rate of 2.1** and includes most OECD economies. In 2009 Australia's fertility rate was 1.9.

**Macro** - large, large scale [Greek *macros* long]

#### Macro factors

Broad factors and emerging trends beyond agrifood and which sit at an international and national level. Impact may be direct or indirect but will have a bearing on the skills and workforce development needs of the industry.

#### At a glance ...

- › Economy
- › World population
- › Shifting workforce
- › Climate change
- › Food security and westernisation of diets
- › Sustainable living
- › Water scarcity
- › Geopolitics
- › Peak oil
- › Rising input costs
- › Research
- › National Broadband Network
- › Competitive labour market
- › Regional 'livability'
- › Urban agriculture

Of increasing global concern is how the emergence of 'failed states' is closely linked with demographic indicators and food insecurity. Populations in 15 of the top 20 failing states are growing between two and four per cent a year - a population growing at three per cent will expand twentyfold in a century.

Commentators now suggest that although 2050 will still see the predicted nine billion world population, it should remain a relatively stable figure. While not relieving the pressure on the world's resources it could provide the time to put in place solutions to the looming food, fibre and fuel shortages.

### SHIFTING WORKFORCE

Australia, like many developed nations, is experiencing structural ageing of its population with implications for the relative size of the workforce compared to the rest of the population. By 2050 Australia is predicted to have 2.7 people of working age to support each Australian aged over 65 years, compared with five people today and 7.5 in 1970. Major implications for GDP per capita will drive further focus on skills development of the existing workforce and lifting participation levels of those outside or marginally attached to the workforce.

Shrinking pools of prospective workers and mounting numbers heading into retirement within OECD nations and several emerging economies is a more serious and intractable issue than many realise, and will largely dictate where investment heads and economies grow. Over the next 20

years, **the largest share of growth in the world's working age population - well over a third - will take place in sub-Saharan Africa, an area already earmarked for frontier investment**, and where eyes are also turning for the much needed growth in world food production having largely missed the green revolution.

## CLIMATE CHANGE

Australia is a nation with extreme climatic variability, most recently evidenced by a decade of widespread drought and the devastating floods of January 2011. Regardless of cause, climate change is now compounding Australia's already harsh weather patterns and shifting the boundaries of climatic norms. Global recordkeeping began in 1880 and the 10 warmest years have occurred since 1998.

**Climate and weather patterns affect almost every aspect of agrifood production:** the plants and animals farmed, average production and production variability, product quality, what areas are farmed, preferred soil types, the management systems and technologies used, input costs, product prices and natural resource management.

**Australia is projected to be one of the most adversely affected countries by climate change** with average temperatures projected to rise by 0.6 to 1.5 °C by 2030. Some predictions suggest food production in Australia could be reduced by over 15 per cent. Changes to water temperature, sea level, rainfall and ocean chemistry will impact on the distribution and abundance of some commercial species around Australia's shores. More variable freshwater flows and tidal interchanges will influence habitats and change the distribution of wetland plants and aquatic organisms.

Many sectors are well placed to manage the risks posed by climate change - adaptation skills and disaster planning now common practice having been honed by decades of experience in dealing with variability. Scientists and producers are already exploring potential for different crop varieties, planting dates, and precision technologies to manage finite resources, and greater use of precision irrigation and global positioning systems to determine changing soil quality.

## FOOD SECURITY AND WESTERNISATION OF DIETS

Each day the world is required to feed an additional 219,000 mouths. The following day, a further 219,000 are added, and so continues the trajectory towards a world population of

*"Food is a fundamental requirement for survival. When it becomes scarce, people will fight for it, yet when it is abundant, we waste it. The transition from abundance to scarcity can happen rapidly. A major drought, a natural disaster or war, can suddenly plunge a community into famine. While the transition to hunger can be rapid, escape from hunger can be slow, painful and difficult."*

### Professor Peter Langridge

Chair, PMSEIC Expert Working Group on Australia and Food Security in a Changing World

*Food security is achieved when all people at all times have physical and economic access to sufficient, safe and nutritious food to meet dietary needs and food preferences for an active and healthy life.*

## United Nations Food and Agriculture Organisation definition

seven billion in 2011. **Australia is largely self-sufficient in food production with around 93 per cent of food consumed in Australia (by retail value) produced domestically.** It affords the nation an enviable but largely unrecognised level of food security. While Australian farmers produce just one per cent of the world's food, Australia is the source for almost three per cent of the food traded worldwide and feeds over 60 million people every day<sup>5</sup>.

December 2010 saw the World Food Price Index hit an all time high with trends on both sides of the supply and demand equation driving up prices. On the demand side, the culprits are population growth, rising affluence, and the use of grain as biofuel. On the supply side, soil erosion, aquifer depletion, the loss of cropland to nonfarm uses, diversion of irrigation water to cities, static crop yields in agriculturally advanced countries, and climate change are all contributing to the 'perfect storm of shortages'.

Countries off Australia's northern shores are particularly threatened by food insecurity and vulnerable to rising conflict due to population growth and reliance on irrigation (figure 1).

**Figure 1. Estimated numbers of hungry people by region**

Region	Number of hungry people
Asia and the Pacific	642 million
Sub-Saharan Africa	265 million
Latin America and the Caribbean	53 million
Near East and North Africa	42 million
Developed countries	15 million

Source: Food and Agriculture Organisation of the United Nations, 2010.

At the same time, **greater affluence in a number of developing economies is witnessing some 3 billion people moving up the food chain, eating greater quantities of grain-intensive livestock and poultry products.** The rise in meat, milk, and egg consumption has no precedent. This increasing consumer base will largely be focussed on the younger, aspirational populations of 'Emerging Asia' - Indonesia, Vietnam, the Philippines and China (where total meat consumption today is already nearly double that in the United States).

## SUSTAINABLE LIVING

During 2011, trillions of dollars of private investment will flow back into global markets. The question for many economists is whether it will head into the old 'brown economy' of the last century or drive establishment of the new green, resource-efficient, innovative, and employment-orientated economy needed in the 21st Century.

<sup>5</sup> www.csiro.au - 2011 Fast Facts

**Degradation of the Earth's wildlife and resources - commonly referred to as biodiversity loss - has lacked concerted worldwide action despite over 60 per cent<sup>6</sup> of its ecosystems now being degraded or used unsustainably.**

With few having been able to pinpoint an economic cost, and many believing it would be the catalyst for action, 2010 saw the release of the equivalent to the Stern Report - *The Economics of Ecosystems and Biodiversity*. The two year study estimated that damage to the natural world by human activity in 2008 cost the world economy between US\$2tn and \$4.5tn.

Governments of developed and developing countries are using policy levers to give effect to the key pillars of a new 'green deal initiative' which has major implications for the future skills profile of agrifood. These are generally considered to be:

- clean energy and clean technologies, including recycling
- rural energy, including renewables and sustainable biomass
- sustainable agriculture, including organic agriculture
- ecosystem infrastructure
- reduced emissions from deforestation and forest degradation
- sustainable cities including planning, transportation, and green building.

Keen to demonstrate environmental credentials, **international corporations are establishing pioneering partnerships with organisations once considered ideologically opposed.** On the Great Barrier Reef, Coca-Cola has joined the World Wildlife Fund and Reef Catchments (a natural resource management group in the Mackay-Whitsunday region of north Queensland) in a project designed to improve water quality and reduce sediment from sugarcane farms. Project Catalyst involves 19 canegrowers committed to improved farming practices, including precision application of chemicals using satellite technology and monitoring water quality.

## WATER SCARCITY

Today, **half the world's population live in countries where water tables are falling as overpumping depletes aquifers** (figure 2). In Saudi Arabia, grain production is collapsing as aquifer depletion has reduced its wheat harvest by two thirds in three years. On a far larger scale, a World Bank study indicates that 175 million people in India are being fed with grain produced by overpumping. In China, the equivalent figure is 130 million people. The increasing dilemma is that as economies move from grain based diets to those based on meat and vegetables, more water will be needed. For those with precious freshwater resources it is sometimes wiser and more sustainable to import food than use it for production, a scenario that presents significant potential for some of Australia's agrifood sectors.

<sup>6</sup> UNEP 2011 Global Environment Outlook

*"Water is the difference between poverty and prosperity, wellbeing and health, and a healthy environment and a degraded landscape. Which side of the equation you are on depends not so much on the amount of water available where you live, but on how that water is managed. As the climate warms, as the population grows, and as demand for water increases, competition for water will intensify. Moving into the 21st Century, we are confronting a new set of problems that demands new thinking."*

**Dr. David Molden**

Deputy Director General  
International Water Management Institute

**Figure 2. Countries over pumping aquifers in 2010**

Country	Population millions
Afghanistan	29
China	1,354
India	1,214
Iran	75
Iraq	31
Israel	7
Jordan	6
Lebanon	4
Mexico	111
Morocco	32
Pakistan	185
Saudi Arabia	26
South Korea	49
Spain	45
Syria	23
Tunisia	10
United States	318
Yemen	24
<b>Total</b>	<b>3,545</b>

Source: Earth Policy Institute

## GEOPOLITICS

In one of the largest geopolitical experiments of modern time, a growing number of developed economies that have exceeded and exhausted their own natural resource base are transferring their risk through massive overseas acquisitions of land to grow food. Commentators fear **poor countries may be at risk of having their real wealth - fertile soil and water - sold from beneath them** by governments of the day.

In 2009 the International Food Policy Research Institute compiled a list of nearly 50 such agreements. Land-buying countries are mostly those whose populations have outrun their own land and water resources. Among them are Saudi Arabia, South Korea, China, Kuwait, Libya, India, Egypt, Jordan, the United Arab Emirates, and Qatar. Saudi Arabia is looking to buy or lease land in at least 11 countries, including Turkey, Ukraine, Kazakhstan, the Philippines, Vietnam, Brazil, Ethiopia and Sudan - the latter two being notable as sites where the World Food Program continues to feed millions of people.

In response to domestic concerns on how overseas investment and foreign ownership is affecting the industry and its potential impact on food security, the Australian Government has requested the ABS survey 171,000 agricultural businesses in 2011. The Rural Industries Research and Development Corporation will carry out a separate study on the history and reasons behind foreign investment in the sector.

## PEAK OIL

'Peak oil' refers to the point at which approximately half of the existing stock of petroleum has been depleted and the rate of production peaks. Since 1981, the quantity of oil extracted has exceeded new discoveries by an ever-widening margin. **In 2008, the world pumped 31 billion barrels of oil but discovered fewer than nine billion.** World reserves of conventional oil – found on or near to shore, close to the surface and in large reservoirs in safe places – are dropping every year.

Much of the remaining oil is 'tough oil' – buried far offshore or deep underground, scattered in small, hard-to-find reservoirs from politically dangerous or hazardous places. **Peaking oil production has direct consequences for world food security as modern agriculture depends heavily on fossil fuels.** Most tractors use petrol or diesel. Irrigation pumps use diesel, natural gas, or coal-fired electricity. Fertiliser production is energy intensive – natural gas is used to synthesise the basic ammonia building block in nitrogen fertilisers. Fuel costs in some commercial wild catch fisheries can be 40 per cent of all input costs.

Ironically more energy is used to refrigerate and prepare food in the home than is used to produce it in the first instance. With higher energy prices and a limited supply of fossil fuels, **several commentators believe the modern food system which evolved when oil was cheap will not survive as it is now structured.**

## RISING INPUT COSTS

**Low energy prices have been a source of comparative advantage in Australia, offsetting disadvantages such as the distance from markets and wage levels** – Australia's electricity costs have typically been around 60 per cent of most European prices.

Electricity prices have risen by about 35 per cent over the last three years largely due to the high capital cost of increased investment in electricity networks deemed as critical to guarantee supply reliability. Australia is more dependent on coal for electricity than any other developed country except Denmark and Greece, and as Australia moves towards clean energy targets, prices are set to rise further in the short term.

Projections are that prices across Australia will triple over the next 10 years directly affecting profitability and some suggest placing pressure on the business case for maintaining a food and grocery manufacturing presence in Australia. **Pressure**

**is already on businesses at every point of the supply chain to use more energy-efficient practices and sustainable use of resources to lower production costs.** Energy audits are now being sought by all scales of business to identify sources of overuse and demonstrate how simple modifications to lighting, water use and refrigeration can make the difference between profit and loss.

## RESEARCH

Australia's agricultural research and development capability ranks among the best in the world and has enabled industry to maintain a leading position despite being the driest inhabited continent with low quality soils and continual climate variability.

Global investment in agricultural research and development has decreased over the last 20 years and is directly linked to the decline in agricultural productivity. Within Australia, investment has fallen from a peak in the 1970s of five per cent of gross value of production to just above three per cent in 2007. Industry claims **many sectors are surviving on research developed in the 1980s and 1990s**, and that without a substantial increase in investment, future productivity is at real risk – a call echoed by the the Prime Minister's Science, Engineering and Innovation Council in its 2010 report *Australia and Food Security in a Changing World*.

Symptomatic of demographic crisis elsewhere across agrifood, the **numbers of the industry's science professionals have fallen by 30 per cent since 2006**<sup>7</sup>. Commentators suggest that **this issue alone will have a significant impact on agricultural research ability and agrifood sectors' capacity to adapt to climate change and sustainable practice at the desired rate.** For example, sufficient numbers of animal pathologists to identify and assess increased biosecurity threats, soil scientists to develop practices that better manage soil carbon and geneticists to inform selective breeding of heat tolerant fish.

It is a shortage compounded by the continuing low numbers of agricultural and food science graduates in Australia capable of assuming their role or disseminating their work in the field. An assessment by the Australian Council of Deans of Agriculture of 50,600 on-farm and agribusiness job advertisements from January 2007 to December 2009 identified 4,200 graduate positions in agribusiness, and a further 1,800 in on-farm production jobs. It's claimed Australia's agriculture universities are turning out just 800 graduates a year.

## NATIONAL BROADBAND NETWORK

Remarkably 2011 will see Wikipedia's tenth birthday, Twitter its fifth, and IBM its 100<sup>th</sup>. It is also the year that the National Broadband Network (NBN) will commence roll out across mainland Australia. Based on Government predictions, the NBN will affordably deliver fibre connections to 93 per cent of premises at speeds of 100 megabits per second,

<sup>7</sup> ABS, Agricultural and forestry scientists ANSCO 2341



and increased speed broadband (about 12 mbps) through next generation wireless and satellite technologies for the remaining seven per cent in remote areas.

If the NBN delivers as forecasted, it could hold significant benefits for people working and learning in rural and remote Australia on a day to day basis. Some see **opportunities for small companies to be more 'discoverable' and have direct conversations with consumers; others see 'paddock to plate' supply chains becoming far more integrated and 'real time'**. Remote monitoring of crops and real time diagnostics on equipment and machinery by technicians thousands of kilometres away are just some of the other potential benefits being discussed.

With over 57 per cent of the agrifood workforce living outside the major cities - in contrast to 27.8 per cent of the non-agrifood workforce - broadband could drive far greater access to skills development and new knowledge produced by Australia's innovation and research system.

Training and assessment in several sectors and regions can pose an unattractive proposition for training providers where insufficient enrolments create a 'thin market'. The NBN has the capacity to establish a more viable market through the use of online resources, on-demand learning, digital simulations, three dimensional modelling and videoconferencing - but **whatever the technology, training providers will need to build into the learning process the social interaction so fundamental to the pedagogy of regional Australia.**

## COMPETITIVE LABOUR MARKET

In April 2010, the then Australian Bureau of Agricultural and Resource Economics (ABARE) identified 75 major resources projects at an *advanced* stage of development with a combined value of \$109.6b. ABARE's list identified a further 286 less advanced projects with a value of \$249.9b subject to either a feasibility study or 'Final Investment Decision'.

The Australian Government's *National Resources Sector Employment Taskforce* was charged with analysing the

expected demand for labour emanating from this investment and in its 2010 Technical Paper, set out a series of projections for skilled labour shortages. **Implications for agrifood sectors could be significant given the shared demand for many of the cited job roles, criticality of many trade occupations to agrifood and the regional focus of both industries.** The Taskforce suggests that shortages will start to intensify throughout the 2012-2013 construction stages of the projects (figure 3).

**Figure 3. Adapted from *National Resources Sector Employment Taskforce: Technical Paper, July 2010 - Table 27 'Heavy and civil engineering construction projection for technicians and trades workers and machinery operators and drivers (short term jobs) 2009 to 2016'***

Occupation	Growth scenario of key job roles		
	Low	Medium	High
Air and Marine Transport Professionals	180	297	445
Natural and Physical Science Professionals	2,370	4,512	6,768
Agricultural, Medical and Science Technicians	89	147	220
Mobile Plant Operators	11,981	19,803	29,704
Stationary Plant Operators	2,296	3,795	5,692
Truck Drivers	4,762	7,870	11,085
Mechanical Engineering Trades Workers	3,710	6,131	9,197
Horticultural Trades Workers	473	782	1,172

Suggestions are that **shortages within agrifood will be experienced between 2013 and 2018 as the resource industry's demand intersects with agrifood's looming age crisis** and as the construction phase transitions into actual mining operations (figure 4). Much will depend on Australia's strategic response to skilled and semi skilled labour demand.



**Figure 4. Adapted from National Resources Sector Employment Taskforce: Technical Paper, July 2010 – Table 28 ‘Projections of growth in mining employment (less oil and gas) 2008 to 2015 by occupation’**

Occupation	Projected employment growth to 2015
Air and Marine Transport Professionals	596
Natural and Physical Science Professionals	9,069
Agricultural, Medical and Science Technicians	1,448
Mobile Plant Operators	4,853
Stationary Plant Operators	56,411
Truck Drivers	7,887
Mechanical Engineering Tradespeople	19,218
Horticultural Trades Workers	133

## REGIONAL ‘LIVEABILITY’

Labour and skill shortages have a strong correlation to the liveability of communities and although there is no established framework or uniform definition of liveability, general agreement is that it bears a close alignment to the triple bottom line characteristics of social, economic and environmental wellbeing.

In an Australian first, seven of New South Wales’ leading regional cities - Albury, Armidale, Bathurst, Dubbo, Orange, Tamworth and Wagga Wagga - have united to form the ‘Evocities’ campaign (Energy, Vision and Opportunity). Its aim is to encourage people to live, work and invest in an Evocity based on their characteristics of:

- › Broadband infrastructure
- › Business numbers
- › House prices
- › Lifestyle and sporting facilities
- › Positive population growth
- › Quality education
- › Quality of infrastructure.

Growth of the fly-in fly-out (FIFO) mining workforce has created unexpected social impacts in regional Australia. While implications on the price of housing, rental properties and absorption of local labour are well known, less appreciated is the stress placed on local services and amenities. Local governments are generally unable to lay claim to population increases and access federal assistance if workers reside in FIFO camps.

Under-resourced health and education services, chronic housing shortages, inadequate transport and communication links severely disadvantage many communities and continue to act as a major deterrent for agrifood employers trying to attract workers and their families into regional and rural communities. What many seek are simply services that are ‘reasonable and similar’ to their urban counterparts.

## URBAN AGRICULTURE

Policymakers and planners often see agriculture as the antithesis of the urban environment but a new breed of architects and agricultural scientists are joining forces to explore the notion of ‘low-impact’ and ‘intelligent living’ where agriculture and urbanisation interconnect. While not widely recognised in Australia, economies such as China and Saudi Arabia are pioneering much of the concept due to their need for food security.

Where high-rise apartment complexes once boasted gyms and lap pools, intelligent living incorporates vertical greenhouses to enable residents to grow their own organic produce, utilise grey water to nourish garden roofs and walls which in turn reduce carbon dioxide and provide natural cooling and shade.

Smartcities involve not just high-tech living, but the use of buildings to enhance food security. Much of this revolves around looking at spaces vertically rather than horizontally to limit usage of cars, sprawl of communities and haulage of food and supplies over long distances. It involves re-examining rooftops, walls, the tops of car-parks, and how those areas could potentially supply cities with food. Taking the concept further and very much on the drawing board, is the notion of vertical farms and housing recyclable production systems within buildings such as aquaponics.

## MICRO FACTORS

### AGEING AGRIFOOD WORKFORCE

While demographics are not necessarily destiny, without significant intervention, several of agrifood's sectors and key occupations are on an unsustainable trajectory due to ageing of its workforce, skilled workers exiting to the resource sectors, and poor attraction rates over an extended period which have left an insufficient pool of young workers. By 2018 over 102,000 of the current agriculture, forestry and fishing labour force - equating to 33.4 per cent - will be aged 65 years and over. A staggering 56.2 per cent will be aged over 55 years. It is a scenario evidenced around the country, in key occupations and across all skill levels - half of our agricultural scientists are nearing retirement, and the average age of jockeys in Queensland, excluding apprentices, is 36 years.

While some loss will be offset by improved technologies and structural efficiencies borne out of corporatisation, industry is deeply concerned about the quantum of skills vanishing from its sectors. In contrast to the picture painted by educational attainment levels, 69.1 per cent of the agriculture sector is classified as being 'highly skilled' and employed as managers, administrators and in professional occupations<sup>8</sup>.

### NATIONAL FOOD PLAN

The importance of Australia's food security is now being responded to in policy circles with work underway on Australia's first ever 'paddock to plate' National Food Plan. As context, Government will consider:

- › domestic and international food security
- › issues which affect food affordability
- › sustainability of Australia's food systems, right along the value chain
- › the productivity and efficiency of the value chain to improve global competitiveness
- › how to streamline business regulations
- › appropriate economic, taxation, labour market and education policy settings for a robust food production system from farmers through the whole chain.

<sup>8</sup> under ANZSCO classifications and in accordance with the census 2006

**Micro-** small, local scale [Greek *micros* small]

#### Micro factors

Factors and emerging trends relating directly to agrifood within Australia and which have a direct bearing on the skills and workforce development needs of the industry.

#### At a glance ...

- › Aging agrifood workforce
- › National Food Plan
- › National Preventative Health Strategy
- › Carbon Farming Initiative
- › Irrigation and water use
- › Biodiversity
- › Biosecurity
- › Animal welfare
- › Biotechnology and breeding
- › Skilled migration
- › Structural change
- › Supply chain
- › Market power
- › Ethical consumerism

Coinciding with the development of the *National Food Plan* is the establishment of the Federal Government's Food Processing Industry Strategy Group, its goal being the development of an innovation strategy for the sector to ensure it continues to attract investment and build new capabilities ready for the growth in global food demand.

### NATIONAL PREVENTATIVE HEALTH STRATEGY

More than 60 per cent of the Australian population is overweight and 25 per cent of children are overweight. The Australian Government's *National Preventative Health Strategy - Australia: the healthiest country by 2020* is a three-phase blueprint for tackling the burden of chronic disease caused by obesity, tobacco, and excessive consumption of alcohol - the annual health and social costs of which sit at \$19b per annum. Its first phase, spanning the 2010-2013 period, is **driving change within the food supply chain to increase the availability and demand for healthier food**



products, and decrease the availability and demand for unhealthy food products. Impact on the food and primary sectors is considerable with the following actions underway:

- ▶ Development and implementation of a comprehensive National Food and Nutrition Framework
- ▶ Establishment of a Healthy Food Compact between governments, industry and non-government to drive change within food supply
- ▶ Working with industry, health and consumer groups to introduce food labelling on front of pack and menus to support healthier food choices with easy to understand information on energy, sugar, fat, saturated fats, salt and trans fats, and a standard serve/portion size within three years.

## CARBON FARMING INITIATIVE

2012 is flagged as the year Australia will have a price placed on carbon. No uniform way currently exists for the generation and sale of carbon credits into international markets. Under Government plans to test-run a carbon market for the sector, **the proposed Carbon Farming Initiative is intended to enable farmers and landholders to unlock abatement opportunities in the land sector** which currently accounts for 23 per cent of Australia's emissions. Potential eligible abatement activities include:

- ▶ Reforestation and revegetation
- ▶ Reduced methane emissions from livestock
- ▶ Reduced fertiliser emissions
- ▶ Manure management
- ▶ Reduced emissions or increased sequestration in agricultural soils (soil carbon).

With international credits selling for around \$20 per tonne over the past year and a half, it represents an opportunity for producers to establish new income streams. According to the Government's proposed guidelines, farmers and landholders will be able to participate in the new carbon market individually or use specialist companies to manage and report on their projects. Other companies, known as offset aggregators, are expected to emerge to manage offset projects across several farms or parcels of land. Regardless of outcome, an increased effort in training to build the required skills and knowledge is anticipated.

## IRRIGATION AND WATER USE

**Agriculture, forestry and fisheries industries (excluding aquaculture) were the single largest user of water in 2008-2009 and accounted for 50 per cent of total Australian Water consumption<sup>9</sup>.** The Murray-Darling Basin is one of Australia's largest drainage divisions covering around one million square kilometres or one-seventh of the continent. It incorporates Australia's three longest rivers - the Murray, Darling and Murrumbidgee - and is one of our most diverse regions. It stretches from Queensland's channel country through New South Wales to the Australian Alps, Victoria's north-east and the Riverina, and into South Australia's Riverland and the Coorong at the mouth of the Murray. Three million Australians inside and outside the Murray-Darling Basin are directly dependent on its water.

**About 85 per cent of all irrigation in Australia takes place in the Murray-Darling Basin.** In October 2010, the Murray-Darling Basin Authority (MDBA) released a draft plan with the stated aim of ensuring the Basin's long term health through the reallocation of water from existing users to the environment. Following strong concerns expressed by water users at public meetings throughout the Basin, the incoming Chair of the MDBA has now indicated that the 2010 report will be replaced with a new draft plan which he will take to the Minister in July 2011. It is expected that this plan will take a balanced and regionally delivered approach to future water use in the Murray-Darling Basin.

Water conservation, use and treatment pose significant challenges across all sectors - from turf production and amenity horticulture through to food processing and the meat sector. The issue of **water efficiency, including recycling and reuse in the food supply chain, remains a critical issue going forward for the wider Australian population** and specifically for the associated sectors in attempting to maintain already narrow margins.

## BIODIVERSITY

Australia's *Biodiversity Conservation Strategy 2010-2030* is a guiding framework for conserving Australia's biodiversity over the coming decades. Biodiversity occurs in all environments - on land, in rivers and lakes, and in the seas and oceans - and comprises three levels:

- ▶ genetic diversity—the variety of genetic information contained in individual plants, animals and micro-organisms
- ▶ species diversity—the variety of species
- ▶ ecosystem diversity—the variety of habitats, ecological communities and ecological processes.

Australia's biodiversity is distinct, irreplaceable and under immediate threat from:

- ▶ habitat loss, degradation and fragmentation
- ▶ invasive species
- ▶ unsustainable use and management of natural resources
- ▶ changes to the aquatic environment and water flows
- ▶ changing fire regimes
- ▶ climate change.

Implementing the Strategy is a shared responsibility across all levels of government, the community and the private sector. **Agrifood sectors and its workforce are a major focus of, and have a major role in the Strategy** as custodians of over 60 per cent of the Australian landmass and the third largest fishing zone in the world. By 2015, **the Strategy aims to achieve a 25 per cent increase in the number of Australians and public and private organisations who participate in biodiversity conservation activities.**

## BIOSECURITY

Australia's disease-free status underpins its world class reputation as a reliable, high quality supplier that is backed by labelling systems, traceability and food safety standards second to none. **It is a status that confers major economic benefits and enables industry to remain competitive in domestic and international markets against low cost, high volume overseas producers.** These demands, and that

<sup>9</sup> ABS 2010

any single break in the supply chain has the capacity to 'undo' another's market share and that of an entire sector, necessitate tough biosecurity measures by all parties.

**As climate change takes hold, overseas travel and volume of trade increases, scientists are warning exotic pests and diseases will find new homes across the globe and disease outbreaks will become more common, necessitating vigilance and breadth of skills within the supply chain.**

Australia is well prepared for biosecurity incursions in terrestrial industries. For marine and aquatic environments the risks are harder to locate, confine and manage. Borne by international trade in live aquatic animals, bait fish, aquaculture feeds, foodstuffs, global logistics and human travel, the risk to Australian fisheries and ecosystems will continue to rise in tandem with globalisation.

Zero biosecurity risk is considered both unattainable and unaffordable. **Australia's commitment is to a 'seamless' biosecurity system which fully involves the relevant players including business, other nations, and the community.** The 2007-2008 equine influenza outbreak in New South Wales and Queensland cost governments and the horse industry \$1.85b direct and indirect costs. Should Australia experience a foot-and-mouth disease outbreak, the cost to the gross domestic product has been estimated to be between \$8b and \$13b in the first year. Conscious of the implications and further to the 2008 review into arrangements, a Senate Inquiry into current biosecurity and quarantine arrangements is due to report in April 2011.

## ANIMAL WELFARE

The *Australian Animal Welfare Strategy* provides a framework for sustainable improvements in animal welfare and embraces a broad vision for the humane treatment of all sentient animals including:

- › livestock/production animals
- › animals used for work, sport, recreation or display
- › companion animals
- › animals in the wild
- › aquatic animals
- › animals used in research and for teaching purposes.

**Adherence to the codes of practice is now a necessity for individual operators to stay in business.** Every aspect of livestock care is now stringently scrutinised by all stakeholders in the production, wholesale and retail chains. Many sectors are taking the framework and applying it in an industry specific context - the dairy industry, Australia's third largest rural industry with a herd of over 1.6 million cows, has introduced the *National Dairy Industry Animal Welfare Strategy*. Significant pressure is also being exerted by fast food outlets which now send auditors and animal welfare experts on site to witness a supplier's environment, animal handling skills and to ensure suppliers continuously exceed minimum standards. Major retailers are also driving change through product specific policies - Coles Supermarkets will phase out its 'home brand caged eggs' by 2013 and from 2014 will no longer source product from pig breeders using sow stalls.

## BIOTECHNOLOGY AND BREEDING

Intertwined with the food security debate and how industry will mitigate the effects of climate change on already arid climates, are worldwide calls for reconsideration of restrictions on genetically modified (GM) seeds. **Proponents claim GM crops remain one of the best options for dramatic improvements to productivity given their resistance to pest and disease, improved storage and nutritional capacity, and tolerance of water, salinity and temperature extremes.** Based on recombinant DNA - combined sequences of DNA which would not normally occur together - its purpose is to create different organisms for a specific purpose, typically new, more desirable characteristics. GM crops continue to be grown by more than 10 million farmers in more than 20 countries, including Australia's competitors.

Selective breeding is the process of developing a plant or animal based on desirable characteristics of the parent. Second nature within racing, livestock, companion animals and crop growing, selective breeding is coming to the fore in emerging sectors such as aquaculture, and being pursued in response to issues such as mulesing.

## SKILLED MIGRATION

Australia's *Permanent Migration Program* provides for 168,700 places in 2010-2011 of which 113,850 places are for skilled migrants based on their work or business skills:

- › *General Skills Migration (GSM)* program - uses a targeted Skilled Occupation List (SOL) focussed on high value professions and good English language ability
- › *Employer Nomination Scheme (ENS)* - sponsored directly for at least three years into full-time positions where a skills shortage exists and listed on the *Employer Nomination Scheme Occupations List (ENSOL)*
- › *Regional Sponsored Migration Scheme (RSMS)* allows employers in regional or low population growth areas of Australia to sponsor skilled foreign nationals for a full-time employment for at least two years.

In addition to the Permanent Migration Program, the Australian Government maintains a range of temporary visas, the most relevant of which for agrifood sectors is the *Subclass 457* visa program. Driven by employer demand, it allows an individual employer to sponsor overseas workers to fill skilled vacancies in identified occupations from three months for up to four years.

**Recognising that skills demand and supply varies greatly across Australia, State Migration Plans are being introduced** and can include a range of occupations broader than those on the Skilled Occupation List.

For several sectors, **the focus on skilled migration fails to meet ongoing labour shortages during harvest period** and has witnessed many employers turn to overseas holidaymakers or 'backpackers' on the Working Holiday Visa (Subclass 417) which enables them to work for an employer for up to six months.

A more structured approach has been the Australia Government's *Pacific Seasonal Worker Pilot Scheme* announced in 2008 with plans to run until June 2012.

Its objectives are twofold: to contribute to the economic development of Australia's Pacific region and fulfil approved Australian Horticultural employers' unmet demand for local seasonal workers. The pilot is limited to citizens of Kiribati, Papua New Guinea, Tonga and Vanuatu.

Over the operation of the Pilot, up to 2,500 visas may be granted. While the first workers arrived in Australia in February 2009, an interim evaluation in June 2010 found that less than 150 visas had been utilised, suggesting demand for the workers may have been hampered by approved employers needing to guarantee six months work and the higher cost of Pacific seasonal workers relative to alternative sources of labour. Changes to the program announced in December 2010 have put in place new cost sharing arrangements and employment terms of four, five or six months with the intention of increasing the scheme's flexibility and take-up.

There are **concerns that the use of temporary migration could reduce investment in the skills development of Australian workers** and that skilled migration must be seen as an adjunct to workforce planning, not a substitution.

## STRUCTURAL CHANGE

International capital regards many of agrifood's assets as undervalued. Conscious of the increasing value and strategic importance of food production, there is growing acquisition by investment funds and foreign corporates of food processing plants and large tracts of agricultural land. While this aggregation brings with it efficiencies, increased professionalism and career pathways, **once sizeable organisations in their own right are becoming cost centres of larger, decisive corporations acutely aware of return on investment.**

The worldwide trend towards work flexibility and the pressure to reduce labour and production costs is changing the nature of employment. **In several agrifood sectors, business models have become reliant on contract labour and specialist services which pose real challenges for building skills of the emerging workforce.** Some occupations, such as trainers, jockeys and trackriders in the racing industry are traditionally self-employed, and seasonal employment will always be intrinsic to sectors such as horticulture and agriculture. But there is clearly a more pronounced trend now emerging across other sectors where the growing need for specialist technical and advisory services is critical but not necessarily to the point of warranting full employment.

Businesses are also diversifying. **Primary producers now have opportunities to look more broadly into food, fibre, energy and bio-based products, and potentially carbon sequestration.** Food tourism or 'agri-tourism' includes food and wine trails, farm stays, outback adventures, conservation volunteering and processing plant tours. With studies showing that food tourism can generate 20 per cent of a farm's annual income and that half of all tourism spending – some \$40b – is outside our capital cities, the opportunities are seeing a further diversification of skills within the industry.

Peri-urban properties are those on the perimeter of urban areas ranging from between five to 100 acres.

*"Go long agriculture and water ... put those investments in the bottom drawer for 10 years. It's unlike anything else we have in the world"*

### Larry Fink

Blackrock Founder and CEO

Largest funds manager in the world

---

**Highly productive, peri-urban agriculture and intensive horticulture generates a significant proportion of Australia's total gross value of production.** Research conducted for the Department of Immigration and Citizenship found that if the Australian population continues to grow at current levels, 430,000 hectares of land surrounding Sydney and Melbourne will be lost to urban development in coming years.

Structural change is also occurring beyond the terrestrial environment. Within the wildcatch sector, Marine Protected Areas, changes to access rights and quotas by State and Commonwealth Governments continue to reshape the industry.

## SUPPLY CHAIN

Domination of the ethical consumer and the undisputed power of major retailers cascades their respective values back through the full supply chain to first line producers. Shorter, more agile, transparent and accountable supply chains are dominating markets and palpably shifting the focus from firm-to firm competition to whole chain rivalry. 'Successful' supply chains rely on cooperation and real time information exchange on market fluctuations and production capabilities. **'Exceptional' supply chains demand collaborative forms of innovation or 'co-innovation' – competitive advantage that is more sustainable given that done well, it is virtually impossible to replicate.** Agrifood supply chains are characterised by large disparities in business size, capacity, organisational culture, skills, management approaches and locations. Each chain is different with the majority of micro and small businesses networked strategically at a regional and sectoral level by necessity to ensure at least some level of influence within the market.

### Supply chain risk management is now a first order skill.

Traceability is a critical component and enables the tracking of any food, feed, food-producing animal or substance used for consumption, through all stages of production, processing and distribution. It enables the enterprise to identify what they receive and from where, and subsequently who they then supply and precisely what they supply. While government regulations and consumer requirements for safety and quality have been the catalyst, suppliers now use the data collected through internal and chain tracking systems for numerous reasons. Synchronisation of data between trading partners, product authentication and verification of attributes are major benefits – as is the capacity to isolate and confine damage in the event of recalls, and save both reputation and financial exposure of large sections of the supply chain.



## MARKET POWER

As a whole, agrifood is generally buffered from the extremes of the boom and bust cycle regularly faced by sectors such as housing due to demand for many of its products being household staples. However, the industry faces other challenges to its profitability with the consolidation of the retail sector.

Although the Australian Competition and Consumer Commission inquiry into grocery pricing found no evidence of market power abuse, concentration in the retail sector allows retailers to put sustained pressure on suppliers' already thin margins. The rising strength of the two major retailers has witnessed their combined share of the food, grocery and liquor spend from 47 per cent in 2000-01 to 54 per cent in 2007-08 and affords immediate and powerful capacity to source commodities worldwide, making competition between suppliers fierce and delisting an on-going reality.

Private label brands are evolving in their sophistication, quality and availability, and in some instances, becoming iconic budget brands in their own right. For manufacturers it tends to force the commoditisation of all but the most innovative, niche or strongly branded products in high volume categories.

## ETHICAL CONSUMERISM

Intentional purchase of products and services created without harm or exploitation of humans, animals or the natural environment is termed 'ethical consumerism'. It works on the principle that spending money with those producers whose practices most align to the consumer's values sends a broader message to the marketplace. Many of the issues are symbolic of the tensions between human consumption and environmental sustainability, for example, the widespread use of palm oil along the food and grocery supply chain is recognised as an increasingly contentious issue.

According to a 2010 Australian Food and Grocery Council study, 84 per cent of consumers were worried about the environmental impact of their shopping. Sustainably manufactured foods are rapidly becoming as important to consumers as healthy, convenient, high quality and 'as-fresh' foods - to the point where this consumer segment has its own branding 'Lifestyles of Health and Sustainability' (LOHAS). Many food experts suggest that, eventually, on-farm environmental certification may be essential for food products to gain market access and shelf space in supermarkets. Sustainable food manufacturing minimises:

- › the impact on the environment
- › water use
- › greenhouse gas emissions
- › waste generation
- › energy requirements.

Carbon labelling is just one of the approaches now being used to inform consumers of a product's footprint along the full supply chain and considered a more informed measure of environmental impact than previous concepts such as 'food miles'. A major study in 2006 on the validity of food miles found New Zealand to be substantially more energy efficient and less carbon intensive than the UK in producing and delivering lamb and dairy products to the UK market. The reason: most greenhouse gas emissions generated by food occur during the farming process, not when the products are shipped to supermarkets.

Many sectors and regions are already on the front foot. A group of cattle producers in Gippsland, Victoria, is marketing beef sourced from properties with independently audited environmental management systems that comply with the international ISO 14001 standard. Their 'enviomeat beef', sourced from 15 suppliers, is thought to be the first labelled food product backed by an environmental management system in Australia.

## CASE STUDY

# INDUSTRIES WORK TOGETHER TO BUILD SKILLS IN REGIONAL COMMUNITIES

### BACKGROUND

The North West region of NSW has undergone many changes during the past decade - drought, difficult financial times and a mining boom - all of which have changed the local economy and social landscape. It is a region home to a diverse range of industries - agriculture, mining and gas exploration, civil construction and capital works.

### THE ISSUE

Many locals have found it hard to commit to the area for the longer term due to the seasonal nature of local industries. For a person to have year round employment, they need a range of skills to capitalise on employment offered by different industries at different times of the year.

### SOLUTION

A joint project between AgriFood Skills Australia, SkillsDMC, and the NSW Department of Education and Training (DET) identified entry level core skills required across the major industries in the region. Together they developed a single program based on Certificate II in Rural Operations and Certificate II in Resources and Infrastructure competencies - the national Training Package qualifications for the respective industries. *Developing Skills for Success* is a cross-industry, entry level, on-the-job training program that prepares participants to enter three industries within the region - agriculture, mining and local government (civil infrastructure).

### IMPLEMENTATION

Prospective trainees were identified through locally placed advertisements, local employment agencies, Job Network and employers. Participants included job seekers, long-term unemployed or underemployed.

Training has given participants the skills and knowledge to operate plant, use tools, think practically and a nationally recognised qualification. Local businesses offered work experience and enabled learners to apply their new skills on the job. It has also enabled learners to meet the business owners and managers - a critical factor in regional employment.

The program - funded by the NSW DET and delivered at TAFE's Narrabri campus - also maps a career pathway to encourage participants to gain higher qualifications.

### OUTCOMES

The program secured employment outcomes for all 2010 graduates. As part of the project, Narrabri Shire Council is also operating a labour hire arrangement where it hires out graduates to the region's local employers. Longer term, the program will bring additional benefits - keeping local people employed locally and helping stabilise the social structure and vibrancy of the community.



*Developing Skills for Success* graduate Laura Harris and Graham Rapp, researcher with the University of Sydney Plant Breeding Institute at Narrabri.

### CRITICAL SUCCESS FACTORS

Factors contributing to the program's success included regional enterprises and local government working cooperatively to lay the foundations for a sustainable skills base capable of supporting industry growth.

Another key factor has been having the program driven locally. Russell Stewart, the program's Business Development Manager, is a local and understands the industries, knows the local businesses and many of its residents. "It's the first time we've approached regional employment like this - recognising the interdependence of industries and how that impacts on the skills of the local communities," he said.

"We need to understand that regional Australia thinks and works differently. Strong labour pools don't just happen - we have to get the players around the table to share the risk so that they can ultimately all share the benefits."

### IMPLICATIONS FOR COMMUNITY AND INDUSTRY

The cross-industry focus of the program has strengthened the regional skill base for industry which can recruit work-ready locals into jobs in mining, agriculture and local government.

For graduate Laura Harris, the course has been life changing. "I was unemployed for almost 14 months. Now, I have work in Narrabri, I've made some great friends and I'm positive about my future," she said.

Whitehaven Coal's Human Resource Manager, Gerry McDonald, said: "I think it is an excellent program - it provides training and experience - it makes people employable in an industry where training programs often just give them another ticket but not necessarily employability."

The region has also benefited from the project with work-ready participants, cross-industry relationships with training providers and the retention of a local skill base. Training infrastructure has also been enhanced in the region as a result of broad community and industry involvement.

Narrabri Shire Mayor, Robyn Faber, said: "The real thing we are doing is helping to retain our home grown people and that is what we are all about."

The project has proved so successful in NSW that it is being replicated in Western Australia and Queensland with the assistance of enthusiastic local industry and funding from the Department of Education, Employment and Workplace Relations.

## MARKET FACTORS

As countries have attempted to kick-start their economies **post the global financial crisis, economists, policy makers and international organisations have noted that in many developed countries, greater focus has been placed on national growth rather than regional development.** In part this is due to the complex nature of regional development and that by its very nature, demands clever policy which recognises each region is a unique mix of attributes – economic, social, cultural, natural and historic – all of which combine to shape a region’s growth and competitiveness.

Analysis by the Organisation for Economic Co-operation and Development<sup>10</sup> (OECD) of post GFC regional growth found how within single countries, regions demonstrate marked variations in economic performance and resilience, great diversity in income levels, employment rates, mixes of high and low productivity, assets, stages of development and human capital.

It found the **key determinants of regional growth are the ability to attract and retain talented people, have a well-functioning labour market, create a well-educated population, have the capacity to innovate, be well connected to global markets, and have a business-friendly environment and infrastructure system.** Integration of these characteristics and translation into regional growth, takes between three to five years to take effect, and strongly impacts on neighbouring regions.

These factors strongly correlate with the five issues industry has flagged during the 2011 consultation process as their priorities (figure 5. At a glance):

- › Employer culture, regional and industry leadership
- › Attraction of workers
- › Adoption of higher skill levels across the workforce (as distinct from high level)
- › Adoption and diffusion of new research, practice and technology
- › Workforce retention and effective skills utilisation.

10 OECD (2009), *How Regions Grow: Trends and Analysis*

**Market** - the place where services and products are exchanged between organisations and/or individuals for mutual benefit [Latin *mercāri* to trade].

### Market factors

Factors and emerging trends relating directly to skills and workforce development within Australia and how these need to be responded to by industry, the training system and government.

### At a glance ...

- › Employer culture, regional and industry leadership
- › Attraction of workers
- › Adoption of higher skill levels across the workforce
- › Adoption and diffusion of new research, practice and technology
- › Workforce retention and effective skills utilisation
- › Related issues

## 1 EMPLOYER CULTURE, REGIONAL AND INDUSTRY LEADERSHIP

Pinpointing any change in industry’s message from one year to the next is more an exercise of reading emphasis than identifying radically new issues. 2011 is most notable for industry’s growing recognition that while skills development remains critical, by itself it will be an insufficient response to the challenges faced by many sectors. **There is acknowledgement that industry – individual enterprises and peak bodies – will need to drive a focus at the workplace level and re-examine some of the most entrenched cultures and management practices that affect each worker every day.**

The notion of ‘employer of choice’ and high performing workplaces (although not by that name) have found resonance, and for agrifood sectors represent key strategies if they are to attract smart minds and drive sustainable productivity growth.

### ‘Employer of choice’ and high performing workplaces

The theory behind ‘employer of choice’ programs is not new to Australia. Examples exist in sectors such as the meat industry, and in jurisdictions such as Tasmania. While there is no agreed definition, it typically focuses on lifting employers’ capabilities around attraction, retention and the development of human capital.



**Figure 5. At a Glance: agrifood industry's high level priorities for skills and workforce development**



High performing workplaces takes a broader approach and considers people, process, technology and plant in a bid to drive more effective employee involvement and commitment to achieving high levels of performance.

Both approaches set up a 'chain of impact' whereby improved practices with people ultimately generate far greater productivity.

**Neither concept involves a single, universal or 'off-the-shelf' formula or set of practices to fit all organisations. Rather, the most meaningful combination or 'bundle' of context-specific practices are shaped and managed to suit each organisation.** These can include human resource management (such as pay and incentives, appraisal, workforce development), work organisation (such as team working and job design), employment relations, management and leadership (including strategic management and business development as well as line management) and organisational development. Importantly, the approach is designed to enhance the discretionary effort employees put into their work, and to fully utilise and further develop the skills they possess.

Driving widespread adoption of better practices is a pre-requisite for several sectors if they are to manage the emerging threats to their competitiveness outlined in previous sections. **It will require collaboration at all levels of industry backed up by a contemporary skills and workforce development system which invests as much in building the capability of the enterprise as it does in ensuring competence of the individual.**

### Skills ecosystems

Skills ecosystems are **self-sustaining networks of workforce skills and knowledge in an industry or region** and is a term first coined to describe how knowledge and skills were formed in the cluster of computer and biomedical firms in Silicon Valley.

**In the context of agrifood, skills ecosystems recognise the deep interdependence of co-located industries** and that only through collaboration and shared risk at the grass roots level will regional Australia develop sustainable and robust skilled labour pools capable of withstanding seasonality and varying business cycles. They harness the expertise found within local governments and shires, regional businesses and the respective communities. They understand the pivotal role of local expert intermediaries and that in the regions, skills and workforce development are inextricably linked, and so too must be the solutions.

Regional coordination between employers, training organisations and employment service providers to increase local employment opportunities and better meet the needs of employers, has been a strong theme in submissions and consultations for the Scan. They have reinforced the **practices pioneered by AgriFood Skills Australia in its building of the Narrabri skills ecosystem in regional New South Wales - an approach independently found to improve productivity of the Narrabri labour force by a potential 3.2 per cent per year and reduce the net migration of workers by 33 per cent** (See 'Building regional capability').

## BUILDING REGIONAL CAPABILITY

The Narrabri Initiative was established by AgriFood Skills Australia following a jobs summit held in Narrabri in mid 2009, and jointly funded by AgriFood and the NSW Department of Industry and Investment. Branded *Make It Work*, the initiative comprises several key elements:

- A cross-industry regional skills development model driven by a local employer and community leaders' group to attract, train and retain workers in the region, and to improve the mobility of workers across enterprises:
  - An important investment under this theme is cross-industry skills training in machinery and operations where participants are trained to work across a range of industries and enterprises in the region. This training also introduces trainees to basic management concepts and operational practices to help them better understand their role in the business, and better communicate with their employer.
- The 'employer of choice' program aimed at improving employers' workforce management capabilities:
  - The principal activity in this area is enhancing employers' capability in job design and titling, contemporary employment and remuneration packaging practices, work organisation and skills utilisation. This builds the capacity to attract new entrants to industry and the region, and to retain and better utilise existing workers.
- Employers collectively working to enhance innovation and productivity through a range of initiatives, including through new career pathways, and developing skilled labour pools and demand schedules within the region to manage seasonal and other employment needs
  - One activity of this part of the Initiative is the labour pool pilot being run by the Narrabri Shire Council. This trial is designed to test the concept of a skilled labour pool that can be tapped into by a range of businesses across the region. The Council offers the pool participants 12 months full-time employment and subcontracts the employees out to business as needed, with many ultimately being offered jobs by industry.
- Improving the skills of the region's broader transport, services and local government workforces that support key agrifood and resources sectors.

ACIL Tasman's impact assessment of the Initiative found an improvement in the productivity of the Narrabri labour force of potentially 3.2 per cent per year (labour productivity only) and a 33 per cent reduction in net migration of workers in the target labour market (labour productivity plus reduced outward migration).

Critically, skills ecosystems are **a powerful, regional vehicle for converting public policy messages on skills and productivity into the kind of language that can inspire businesses to act**, and by doing so enhance not only the competitive advantage and success of individual enterprises, but ultimately, the performance of the broader region. Strong support for this model has been voiced across several regions and will see AgriFood Skills Australia work to drive broader adoption in 2011.

### Industry leadership and champions

Agrifood enjoys a large number of industry associations and peak bodies at both a jurisdictional and national level. Many of these bodies are sector or commodity specific which ensures a high level of relevance for member services and advocacy. It can however, make it **hard to achieve strong, coherent messages on cross industry, large scale issues**. It also risks dilution of scarce resources and impact where activities are duplicated, or if inconsistent policy positions or approaches are put forward.

Skills and workforce development is one such issue. **The looming crisis in workforce ageing and any hope of reversing the unsustainable demographic will need a coordinated, unified approach by industry**. Clearly industry is starting to feel the effect and understands the impact on sustainable productivity growth, but this has not always translated into clear strategy or its resourcing. Industry bodies will need meaningful support to establish workable strategies given the best solutions are not always easy to understand and the VET system is notoriously complex.

While there is **no shortage of strategic plans across our many sectors or tiers of government** (figure 6), there is growing support for an overarching strategy to establish targeted action. AgriFood Skills Australia's work on the *National Agrifood Skills and Workforce Development Strategy* - supported by the Primary Industries Ministerial Council in April 2010 - will assume a newfound urgency throughout 2011 as a consequence.

The loud voice of peak bodies, as advocates of action and champions of the 'employer of choice' and high performing workplace concepts will be key success factors. Industry champions - selected for their passion and experience - already exist across several sectors and will be a fundamental 'human' element in communicating the personal benefits and reinforcing the messages of peak bodies.

## 2 ATTRACTION OF WORKERS

Around 80,000 learners annually enrol in nationally endorsed agrifood qualifications. It is unclear how many of these are employed within industry at the time of enrolment but we do know that less than half will still be employed by industry six months after they leave training. This trend is common across the majority of industries but for agrifood it has important meaning - without intervention, the number of graduates emanating from the vocational and higher education sectors will not address the looming shortfall of workers.

### Contemporising industry's image

Several agrifood sectors suffer from chronically outdated images which belie their positive contribution to some of the biggest challenges facing the nation - reducing carbon emissions, improving water management, restoring biodiversity, lifting the nutritional and long term health standards of the population. **Academics, policy makers and even careers advisers are susceptible to the stereotypical image of regional Australia and agrifood sectors** which are often reinforced by media footage of the climatic extremes experienced by regional Australia.

Some agrifood jobs are physically tough, involve long hours and seasonal work. Equally and **increasingly there are technical and highly sophisticated job roles in vibrant, world class companies**. Promoting an industry image which focuses on contemporary and emerging job roles, and importantly the pathways they open up, remains paramount. Several industry bodies in sectors such as amenity horticulture, dairy and racing have done well in getting the message out to schools through on-line multimedia. But this will always need to be backed up at a local level by businesses and their engagement with local schools to convert a child's interest into a teenager's chosen vocation.

### Agrifood cadetships

Traditional apprenticeship and traineeship models across all industries are under pressure to perform. High non-completion rates exist across the jurisdictions; there are difficulties in attracting new apprentices in areas of major skills shortages; and debates about the need for alternative models, including more accelerated forms of apprenticeships. The expert panel established by Government and charged with providing advice on potential areas of reform released its paper in February 2011.

New job roles across agrifood sectors at para-professional and technician levels are rapidly emerging in response to the need for deeper knowledge and higher level skills in sustainability, increased yields and animal performance, breeding and nutrition. Employment based training pathways do not exist to support entry into these job roles. In part this is due to the 'newness' of the roles but also that they sit at a higher skill level than typically associated with Australian Apprenticeships and is a point of difference the industry want to reinforce.

Within many areas of industry, **there is strong support for the notion of agrifood cadetships both as an overt positioning statement on modern agrifood and as a means of giving bright people an attractive pathway**.

Agrifood cadetships hold significant potential as a pathway from VET in schools and national curricula. Their technology and science focus should also open up far greater articulation into undergraduate programs than has previously been possible. **Connections of the cadetship programs with relevant Cooperative Research Centres (CRCs) and Research and Development Corporations (RDCs) will also enable learners to spearhead greater 'speed to market'**

**Figure 6. Snapshot of some of the policies and strategic plans set to impact on the skills and workforce of agrifood sectors**

### COMMONWEALTH OF AUSTRALIA

- ▶ Australian Animal Welfare Strategy
- ▶ Biodiversity Conservation Strategy 2010 - 2030
- ▶ Farming Future
- ▶ Caring for our Country
- ▶ Indigenous Land Corporation - ILC Agricultural Businesses Strategic Plan 2007 - 2012
- ▶ Fisheries Research and Development Corporation: Investing for tomorrow's fish - Research, Development and Extension Plan 2010 - 2015
- ▶ National Preventative Health Strategy - Australia: the healthiest country by 2020
- ▶ National Food Plan - *under development*
- ▶ National Primary Industries Research, Development and Extension Framework - *under development*
- ▶ National Strategic Rural Research and Development Investment Plan - *under development*

### INDUSTRY STRATEGIES

- ▶ Advancing Australian Cotton: Strategic Plan 2009 - 2013
- ▶ Animal Health Australia: Strategic Plan 2010 - 2015
- ▶ Australian Lot Feeders' Association: Strategic Plan 2010 - 2015
- ▶ Australian Pork Limited: Strategic Plan 2010 - 2015
- ▶ Australian Southern Rocklobster Industry Strategic Plan 2006 - 2011
- ▶ Australian Wool Industry: A New Direction - Strategic Plan 2010 - 2013
- ▶ Dairy Australia Strategic Plan 2011 - 2015
- ▶ Meat Industry Strategic Plan 2010 - 2015
- ▶ National Farmers' Federation: Strategic Plan 2010 - 2013
- ▶ Nursery Industry 2010 - 2015 - The Strategic Plan for Australia's greenlife industry
- ▶ Primary Industries Education Foundation Strategic Plan 2010 - 2013
- ▶ Wine Australia: Directions to 2025

### WESTERN AUSTRALIA

- ▶ Skilling WA - A Workforce Development Plan for Western Australia
- ▶ Thoroughbred Strategic Plan - Securing the Future
- ▶ Aquaculture Development Council Strategic Plan 2008 - 2012

## NORTHERN TERRITORY

- › Territory 2030 Implementation - 20 year strategic plan
- › NT Agribusiness Strategy 2011 - 2016
- › NT Strategic Plan for Fisheries Research and Development 2007 - 2011
- › Jobs NT Employment Strategy 2010 - 2012

## QUEENSLAND

- › Toward Q2: Tomorrow's Queensland
- › Australian Agricultural College Corporation 2012: Reconnecting Agricultural Education
- › Seafood Skills Formation Strategy
- › Processed Food Sector Action Plan

## NSW

- › NSW State Plan - Investing in a Better Future
- › NSW Industry and Investment - AgriFood Growth Plan
- › Racing NSW Strategic Plan 2010
- › NSW Biosecurity Strategy
- › NSW Strategic Skills Plan 2011 - 2015 - *under development*

## ACT

- › ACT Skills Future
- › The Canberra Plan: Towards Our Second Century

## VICTORIA

- › Securing Jobs for Your Future - Skills for Victoria 2009 - 2012
- › Ready for Tomorrow: A Blueprint for Regional and Rural Victoria
- › Racing to 2020: Vision for the Victorian Thoroughbred Racing Industry
- › Victorian Food Strategy - *under development*

## SOUTH AUSTRALIA

- › Skills for All: 2011 - 2014
- › South Australian Food Strategy 2010 - 2015
- › 2010 Agrifood and Wine Industry Workforce Action Plan
- › South Australian Seafood Industry Food Plan 2010 - 2015
- › Thoroughbred Racing SA Strategic Plan 2009 - 2012

## TASMANIA

- › Tasmania Together 2020
- › Tasmanian Skills Strategy 2008 - 2015
- › Racing Industry Skills Plan 2010 - 2012
- › Tasmanian Biosecurity Strategy



## dissemination of research findings and new knowledge on the ground.

AgriFood Skills Australia will formally scope development of possible cadetship pathways during 2011 following stakeholder feedback and suggestions that the following job roles could benefit from a cadetship pathway:

- › Field Technicians
- › Hydroponic Technicians
- › Irrigation Agronomists
- › Park and Reserve Managers
- › Plant Protection Technicians
- › Primary Product Inspectors
- › Veterinary Nurses.

### Australian Curricula

Australian governments are committed to developing and implementing Australia's first national curriculum. The Primary Industries Education Foundation is a tripartite not-for-profit company established as the peak body on primary industries education from Kindergarten to year 12. Its work with the Australian Curriculum, Assessment and Reporting Authority – the body responsible for the development of national curriculum – has established agreement to put in place:

- › An optional subject called 'primary industry' in the national curriculum for years 7-10
- › Kindergarten to year 8 context entitled 'primary industries'
- › Greater emphasis on primary industries as examples throughout all the learning areas.

Science is one of the first learning areas being developed and the **draft senior science curriculum includes four learning areas: biology, physics, chemistry, and earth and environmental science – all critical to the challenges before agrifood**. While substantial implementation of the national curriculum will not occur until at least the end of 2013, and take several years before benefits can be realised, it is increasingly important to create aspirations for agrifood careers at the school level given student preference will now start to drive the allocation of university places.

Critically, **pathways will need to be established from the national curricula into VET in Schools, and with the ultimate goal of getting young people into industry, a cadetship or an undergraduate place in a science or agrifood related discipline** (see Taminmin College case study). VET in Schools already accounts for 10 per cent of all agrifood learners with 8,933 students enrolled in a nationally endorsed qualification in 2009, over 4,000 of which were in rural production.

### Employment of Aboriginal people

Aboriginal people are significant participants in agrifood qualifications, comprising 8.1 per cent of all agrifood students in 2009 and much higher than the proportion in the broader population or in the public VET system. However, low numbers of Aboriginal people complete tertiary courses in agricultural, environmental and related studies<sup>11</sup> and this represents an area of untapped potential.

Effective engagement of Aboriginal people in agrifood is not only the right thing to do, but there is a compelling business case. **Aboriginal people play a significant role in biodiversity conservation in Australia**. They hold title over a large and increasing proportion of Australia's lands and waters, and are the guardians of traditional ecological and cultural knowledge of Australia's natural environments. Currently, 20 per cent of the land area of Australia is under Aboriginal management, including 23 per cent of the National Reserve System.

Aboriginal people have a special connection and relationship with Australia's natural environment and this **traditional ecological knowledge needs to be more actively promoted to other biodiversity managers**. Transfer of knowledge needs to be two-way – **it is also important that Aboriginal people have access to scientific knowledge and best practice for natural resource management**.

Many Aboriginal communities remain socio-economically disadvantaged with few employment opportunities, especially in remote areas. Environmental management and biodiversity conservation has the potential to provide significant opportunities for employment, for maintaining culture and for raising living standards.

## 3 ADOPTION OF HIGHER SKILL LEVELS ACROSS THE WORKFORCE (AS DISTINCT FROM HIGH LEVEL)

### Incremental delivery of skills

AgriFood sectors are finding it increasingly hard to reconcile the policy settings of the training system with the skill needs of its workforce. While recognising the relatively small sample size in NCVER's satisfaction survey of employers that use Nationally Recognised Training, between 2005 and 2009 agrifood employers recorded dissatisfaction ratings at least double of other industries which reinforces consistent and persistent industry feedback.

Industry cites two main reasons. Firstly, the system's focus on full qualifications as the basis for how it plans, funds and delivers training which sits at odds with the long established learning culture prevalent across many sectors (and regional Australia) which is incremental, socially embedded and occurs over a lifetime. Secondly, the currency of practitioners responsible for the delivery and assessment, and as a consequence the relevance of skills being delivered.

The quantum shifts in technology, science and practices now demanded of the workforce are unprecedented but the system's policy as it stands does not support industries undergoing this scale of widespread upskilling. There are **resounding calls from industry and responsive training providers alike for the 'building blocks' approach to skills development** to be better understood, philosophically recognised, and systemically funded. There is a strong view that this would generate far more engagement of industry with vocational education and training and greater levels of co-investment.

No one is calling for Skill Sets at the expense of qualifications. For some sectors they form an important pathway to qualifications, for others they are a mechanism to further



upskill employees post qualification. This suggests that the debate over whether policy should focus on Skill Sets or qualifications is irrelevant; rather it should establish how the system can better support the long espoused philosophy of 'lifelong' learning and realities of an increasingly competitive global marketplace.

**While there is a broad trend for workers to be higher skilled (as distinct from highly skilled), and governments' spotlight is on Certificate III and above, there are concerns that training for semi-skilled job roles will be neglected.** In the case of seasonal workers this may not be a qualification per se, rather the need for basic, rounded sets of skills that enable a person to safely operate in an agrifood environment.

Further concerns exist around the move towards student entitlement and the criteria applied by some jurisdictions to limit access to publicly funded training if a learner holds a higher level qualification - even in an unrelated discipline. Given a number of sectors, such as landscaping and horticulture, are often the beneficiaries of 'career changers' the criteria are viewed as a significant disincentive to skills development.

#### **Language, literacy, numeracy and digital literacy needs**

In 2009, the Council of Australian Governments noted that more than four in 10 working age Australians had literacy and numeracy skills below level three, the minimum level considered necessary to meet the demands of work and life in a modern economy. Specifically:

- More than 7 million Australian adults are likely to experience difficulty with reading skills
- Nearly 8 million Australian adults are likely to experience difficulty with numeracy skills
- About 2 million adult Australians are in the lowest literacy category.

These results mirror the deep concerns expressed by both agrifood employers and training providers regarding capabilities of new entrants and existing workers; concern which continues to grow given **proficiency will dictate the workforce's capacity to absorb higher level skills now demanded right across the sectors.** There is also concern that **low digital literacy levels will make older workers**

**vulnerable as technology rapidly evolves, increased risk management necessitates higher level analytical and communication skills, and the National Broadband Network changes business models.**

While there are views that the enormity of the problem is a failing of the school system, it is a far more complex issue. One-sixth of the Australian workforce was educated overseas. Perhaps more importantly is that there is a difference between school literacy and numeracy and the skills required in the workplace.

Across agrifood, moves to address the language, literacy and numeracy (LLN) challenges are compounded by:

- the small size of the majority of enterprises and their physical proximity to training providers
- the sometimes seasonal, casual and part-time nature of employment
- the concerted 'over time' nature of LLN skills acquisition
- the level of awareness among employers of the relationship between LLN and broader productivity.

LLN is being strengthened across all Training Packages and there are moves to build capabilities of the training system and its practitioners. Governments are increasing investment in the long established Workplace English Language and Literacy Program for existing workers and the Language Literacy and Numeracy Program for jobseekers. Optimising these opportunities will require industry peak bodies and associations to play a major role in:

- De-stigmatising the whole image of LLN with employers by messaging it as central to productivity and that it makes smart business sense
- Growing enterprise and worker demand for support.

## **4 ADOPTION AND DIFFUSION OF NEW RESEARCH, PRACTICE AND TECHNOLOGY**

### **'Interconnected' tertiary sector**

Seamless pathways from VET to higher education is a key recommendation from the *Bradley Review of Australian Higher Education*. In 2009 research by AgriFood Skills Australia into the availability of credit transfer between VET and the 42 institutions which comprise the University sector proved not only how complex and difficult it is to ascertain what arrangements are in place, but that full credit transfer is both scarce and highly inconsistent between institutions. Where credit arrangements do exist, they appear to play a significant role in managing supply and demand for places - credit arrangements being most generous where locations and lower population levels make it harder to fill places and vice versa.

**Few institutions understand that for an industry with marginal affinity to full qualifications, the focus on credit transfer is a relatively fruitless exercise for existing workers at least.** Recognition of existing skills and capacity to undertake the study should be the key determinants and are best assessed through Recognition of Prior Learning - a process typically associated with the training system but which can readily transfer to the higher education sector as successfully evidenced by Rangelands Australia based

at The University of Queensland (see Rangelands Australia case study).

Consultations for the Scan again cite the systemic blockages for articulation to the higher education sector and the well documented flaws of negotiating individual arrangements with each university for each program.

### **Greater adoption of CRC/RDC outputs**

The research and development system for agrifood sectors is complex. It involves the Department of Agriculture Forestry and Fisheries, State Departments of Primary Industries, Department of Innovation, Industry Science and Research, CSIRO, Cooperative Research Centres, Rural Research and Development Corporations, universities, the National Climate Change Adaptation Research Facility and agribusinesses more broadly.

The practical delivery of research findings remains a well documented weakness of the system both with respect to capacity and 'speed to market' and undermines much of the world class work that it generates. Evidence with minimum till practices demonstrate how it can take 30 - 40 years for embryonic research to make it to mainstream adoption. While there are calls for a single, coordinating research strategy and a Productivity Commission inquiry into investment levels, more can be achieved simply by instilling a transformative business model which links together Australia's innovation system and the vocational education and training sector (see Manbulloo case study).

**Far greater recognition of who ultimately applies new knowledge and practice generated by the research system remains a key to unlocking both the speed and breadth of adoption.** A new breed of para-professional and technician level job roles are emerging across agrifood, and quickly. These job roles will be the focus of high level cadetships, and it is during their training where a convergence with the innovation system needs to occur. Bringing together trainers and researchers or even extension officers to provide context, theory and application in one learning process will enable students to spearhead dissemination and application on the ground both during and after training. 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.

Research commissioned by AgriFood Skills Australia in 2008 found that most RDCs and CRCs did not view the training system as an important step on the knowledge adoption pathway. While a few have since started to recognise the value of the training system, training providers are not typically considered key players in building industry capacity or knowledge adoption. Suggesting a lack of understanding of what units of competency are, how they are used and the place of individual technologies within them, a number of CRCs claimed that competencies and qualifications were either not in place for the occupations they target or that outputs of their research programs are so new that no relevant competency standards are yet in place.

## **5 WORKFORCE RETENTION AND EFFECTIVE SKILLS UTILISATION**

### **Recognition of current competencies**

While recognition of prior learning is seen as an integral and valued component of the learning pathway, and in many cases a catalyst to accessing formal education, both training providers and industry criticise it for being costly, difficult to access and implement. In 2009, only 5.8 per cent of publicly funded students applied for Recognition of Prior Learning.

Recent studies<sup>12</sup> have suggested that the major barriers to people's pursuit of Recognition of Prior Learning include: a lack of awareness of the actual process and its availability; the complexity of the process; exclusivity of the language surrounding recognition; a devaluing by learners of their own experiential learning; and a preference for participation in training.

**As a strategy to underpin worker retention, better understanding and utilisation of a worker's skills, and the re-engagement of workers in the learning process, Recognition of Prior Learning must be better promoted and championed.** Its potential is most important for experienced agrifood workers who do not hold trade certification or other qualification and who lose their jobs, and as a means of evaluating skills of refugees who some suggest could be an untapped source of skilled labour. Industry peak bodies, associations and proactive training providers need to play a major role in partnering with each other to publicise the process and ensure candidates receive strong and overt support in the workplace.

### **Comprehensive workforce data**

A key constraint in addressing several sectors' needs is the absence of clear data on the current labour demand versus labour supply ratio, a situation made more complex by the seasonality and casual nature of work. Demographics from the 2006 census, projections for skilled labour by the resources sector, and anecdotal evidence from across the sectors all point towards a looming manpower and skills crisis.

Of the 19 broad industry groups, Agriculture, Forestry and Fishing has the highest proportion of workers aged 45 years and over (57.9 per cent), compared with the average for all industries (38.5 per cent). We also know it has the highest share of workers aged 65 years and over (11.9 per cent) compared with just 2.6 per cent for all industries. Just how and if this has been impacted by the drought, subsequent floods and offset by structural adjustment, corporatisation and technology is unclear.

**Attempts by the various tiers of government, local and national bodies to quantify need have been repetitive and administratively burdensome for companies, and provides data of limited reliability given the likelihood of duplication and weak concordance.** The Department of Education, Employment and Workplace Relations has developed an

<sup>12</sup> NCVET, 2009

Internet Vacancy Index (IVI) covering all occupations across all skill levels based on a count of online vacancies newly lodged on SEEK, MyCareer, CareerOne and Australian JobSearch. It is not however, a method of recruitment used by the agrifood sectors at large.

To be clear, industry is not asking to look into the future, but simply to gain a better understanding of the present so it can start to plan and mitigate against looming skills and labour shortages.

## RELATED ISSUES

### National AgriFood Skills and Workforce Development Strategy

Not all of the skills and workforce development issues identified by industry in the consultation process require a VET response. Related solutions include improving workforce planning, workforce conditions and extends through to better local services and infrastructure to improve the attractiveness of regional Australia.

**The breadth of the workforce ageing crisis and extent of upskilling required by existing workers goes beyond the resources and scope of any single government, sector or group of VET institutions.** It will need the expert capabilities of the three tiers of government, draw on the networks that sit within each industry sector, and need the leadership and reach of industry organisations.

The *National AgriFood Skills and Workforce Development Strategy* has been conceived on this basis and its development by AgriFood Skills Australia was given support by the Primary Industries Ministerial Council at its April 2010 meeting. AgriFood will test and validate the Strategy with its industry stakeholders throughout 2011 to ensure a united, powerful and coordinated voice for agrifood's diverse industry sectors. It will generate **greater industry and enterprise understanding, ownership and leadership on the skills and workforce issues set to dominate over the short, medium and longer term.** Ultimately, it will deliver a coordinated strategy for action that leverages existing government and industry initiatives.

### ANZSCO

The *Australian and New Zealand Standard Classification of Occupations* (ANZSCO) is the baseline data classification used to define occupations according to the level of skill and specialisation. Collection, analysis and publication of occupational statistics against ANZSCO plays a large part in directing integrated policy, programs and funding related decisions on education, employment and immigration eligibility.

**With agrifood sectors having rapidly evolved over recent years, many of the ANZSCO classifications no longer provide an accurate reflection of the skill level of many jobs, or capture the new and emerging job roles key to the future of the industry.** AgriFood has sought to influence its scope and currency but changes to ANZSCO are not a short term proposition. The next minor review of ANZSCO will be conducted in 2012 following the 2011 population census. The Australian Bureau of Statistics plans to hold the next major

review of ANZSCO after the 2016 census and to release the ANZSCO Second Edition in 2021.

The system's capacity to address inconsistencies, and the implications for industry in the meantime, underscore the importance for government agencies to more broadly test and validate decisions on occupational demand.

### Shortage of skilled trainers and assessors

Evidence is accumulating of an impending shortage of agriculture and horticulture teachers in secondary schools in New South Wales and some other states. Job advertisements have been increasing and a number of positions have needed to be readvertised or the school discontinue the subject offering.

Shortages of trainers, assessors and auditors with industry currency are a systemic weakness across agrifood and have been flagged in previous Environmental Scans. It is a problem set to worsen with the looming retirement crisis in agrifood and mainstream industry searching out alternative sources of skilled labour. In simple terms, **schools and the VET sector will be competing with industry to retain their most qualified and competent trainers and teachers.**

For those trainers and teachers that do stay in the profession, currency remains paramount and necessitates partnerships with local enterprises and industry more broadly if they are to remain valued. In sectors which live and die by their capacity to innovate and stay on par with world practice, those training providers and individual practitioners that lag behind will continue to be quickly overlooked by industry.

### Regional focus for the new Intergovernmental National Agreement for Skills and Workforce Development

With negotiations set to commence between governments for a new Intergovernmental *National Agreement for Skills and Workforce Development*, there is real opportunity for the system to refocus and strengthen its efforts in regional Australia.

While the nature of National Agreements is to establish high level targets, it is clear from conversations with policymakers and program administrators that **targets in the current Skills and Workforce Development Agreement have had an overriding and cascading effect on jurisdictional funded programs, to the point where full qualifications are essentially 'the' currency of the system and Skill Sets a largely unfunded policy.** While the impact of that focus continues to play out negatively for agrifood sectors, it is suggested that this same flow on effect could be used to the advantage of regional Australia if the new Agreement contains explicit inclusion and industry agreed targets for regional Australia. Only then will it be possible to drive the breadth and quantum of change required to build regional Australia's skills base.

## CASE STUDY

# RANGELANDS AUSTRALIA: ENCOURAGING INDUSTRY INTO HIGHER EDUCATION

### BACKGROUND

Rangelands Australia is based at the University of Queensland's Gatton Campus in the School of Agriculture and Food Sciences. It is an award-winning centre established in 2001 to strategically address the lack of courses available in rangeland management\*. The centre employs four staff and has developed six short courses, 12 postgraduate courses and three postgraduate coursework programs in rangeland management.

Rangelands Australia has won several education and learning awards in Australia in the past three years. Its success is also recognised in the US where a consortium of 30 universities use it as the inspiration and model for changing the way their rangelands courses are developed and delivered.

### CHALLENGE

Rangelands Australia's extensive market research identified its future growth was with mature age students in regional and remote Australia. However, many in this market were unlikely to have formal qualifications and if they did, they were likely to be out of date or not relevant.

The centre's challenge was how to give this market access to higher education without adopting formal articulation arrangements which is standard practice at universities. How would it navigate a pathway through the credit system in such a complex environment, and reach agreement on credits with other educational institutions across Australia?

### SOLUTION

Centre director and Professor of Rangeland Management, Dr John Taylor, said: "In the end, we just had to take another route."

Rangelands Australia developed an entry system similar to the model used in the vocational educational and training environment where entrants are recognised for their prior learning (RPL). Instead of focusing on the past education attainment of its learners, it treats them as individuals focusing on the actual skills they bring regardless of where and how they were learned. It takes into consideration completed training courses, external roles held, performance measures used in their businesses and on their properties, awards they have received and their own personal ability to complete the course including their commitment, determination and time management skills.

Taylor says that implementation of their RPL system is "not that difficult because it is only a matter of establishing that the individual has the knowledge equivalent to a person with a degree."

### OUTCOME

When the centre offered its first course in 2005, it had five students. By 2010, there were 45 graduates, 80 students enrolled in the programs and 120 undertaking

individual courses. The past three to four years has seen a 180 per cent increase in enrolments and 220 per cent increase in course participants. This compares to a 35-60 per cent decline in agricultural course enrolments nationally.

Student evaluations collected over the past five years, reveal a high degree of satisfaction. Mature-aged students report the courses are practical, relevant, flexible with quality teaching. Evaluations reveal average scores ranging from 4.7-4.9 (1-5 scale) for relevance to students work/business; relevance to student's future in the bush and overall satisfaction with the course.

### CRITICAL SUCCESS FACTORS

The key ingredients that have made Rangelands Australia such a success include its responsiveness to its key learning market and other stakeholders, its confidence and clear plan of where it was going. Also significant was the support and encouragement from industry and governments which urged the centre to "do something different"; in particular the Department of Agriculture, Fisheries and Forestry, the Queensland Government and Meat and Livestock Australia (the centre's co-founder).

### IMPACT ON INDUSTRY

Taylor believes that developing better rangeland managers builds a stronger pastoral industry in the future - managers better able to understand and implement innovative strategies which take into consideration not just the environment or production or social issues - but all these things.

*"Getting recognition for my knowledge and experience at Rangelands has enabled me to study at a level that's useful to me. The course has helped refine my methods and tools of land management and made a significant difference to the ecological state of my land. I don't think I would have followed this path to university had I not got this recognition"* Christine Ferguson, owner/manager of Myrning Station, a goat and sheep property located in far north western New South Wales. Graduate Diploma of Rangeland Management student.

\*Rangelands make up 80 percent of Australia and generate significant wealth through various industries including 6,000 pastoral enterprises.



Rangelands Australia students at Charters Towers. Rangelands Australia is breaking the mould by recognising the intrinsic skills already held by mature age students in regional and remote Australia through Recognition of Prior Learning.

## SECTION 2

# IDENTIFIED WORKFORCE DEVELOPMENT NEEDS

Attempts to neatly quantify the labour and skill needs of the agrifood workforce are typically fraught with complexity. **Seasonality, the sometimes informal labour-hire practices and cross industry employment patterns used in regions have ensured that pinpointing labour shortages and projecting need are at best difficult.**

Compounded by baseline statistics from the August 2006 census - a period of widespread drought - the capacity to pinpoint need based purely on quantitative data becomes an unreliable and at worst, misleading exercise. It is precisely why planning of future training provision must not be a substitute for the close relationships needed between training providers and industry.

The poor statistical picture of the agrifood workforce has implications far beyond the provision of training. **The lack of data has not helped industry recognise or plan for the looming crisis in workforce ageing in critical job roles,** such as farm managers and jockeys - areas where shortages already exist. Nor has it sufficiently tracked the growth of once specialist occupations which

are now increasingly commonplace and fundamental to industry's future, for example, irrigation designers, food technologists and occupational divers.

As a consequence, the narrative approach to Environmental Scans (as distinct from hard quantitative projections based on past behaviours) remains the most insightful way of articulating the emerging trends driving the skill and workforce development needs of our industry. To those within governments responsible for planning and purchasing training effort, **the narrative breathes life into existing statistics, and critically, builds understanding of how the key drivers will impact, and how any changes to those drivers are likely to require an adjustment to training provision.**

**The following snapshots distil information and advice gathered throughout development of the Environmental Scan into short sharp summaries of workforce development need by each major sector.**



## FOOD, BEVERAGE AND PHARMACEUTICALS OVERVIEW

Comprises food processing, pharmaceuticals and beverages and is Australia's largest manufacturing industry with total sales of over \$100b. Consistently accounts for over 21 per cent of manufacturing industry employment and involves over 224,000 employees, 60 per cent of which are located in metropolitan areas. Over 2,300 wine companies add to this picture, with the pharmaceutical sector employing approximately 14,000 workers and turning over \$8.8b per annum.

### MAJOR CHALLENGES & TRENDS

- › Attracting and retaining workers at all skill levels
- › Evolving job roles which require higher and/or greater breadth of skills and use of technology
- › Instilling sustainable production systems capable of delivering strong economic returns
- › Encouraging and harnessing greater levels of innovation

### NEW AND EMERGING SKILLS

- › Sustainable manufacturing/quadruple bottom line
- › Water harvesting and filtration systems/water cycle management
- › Supply chain risk management across all occupations
- › Food science and technology

### REPORTED LABOUR SHORTAGES

- › Baker and Pastry Cook
- › Food and Drink Factory Worker
- › Food Safety Auditor
- › Food Scientist and Technologist
- › Poultry Process Worker
- › Primary Products Inspector
- › Sales Representative

### DELIVERY REQUIREMENTS

- › Building blocks approach to skills development in support of full qualifications
- › Integrated and innovative delivery of skills combined with the diffusion and adoption of research findings to raise enterprise productivity



## MEAT OVERVIEW

Comprises meat processing, meat wholesaling, meat retailing, small goods manufacturing and food services. Approximately 5,800 enterprises employ around 55,000 workers. Around 9,600 workers undertake Australian Apprenticeships each year; a further 2,500 undertake higher level training supported by industry.

### MAJOR CHALLENGES & TRENDS

- › Labour shortages and lifting employee retention rates
- › Driving efficiencies and lowering input costs
- › Meeting changing regulator and customer requirements
- › Embedding career paths and rewarding job design
- › Growing contemporary industry leaders to drive high quality workforce development practices
- › Lifting innovation capability and capacity of enterprises

### NEW AND EMERGING SKILLS

- › Skills and knowledge to address national and international standards in meat safety, meat quality, animal welfare and specific customer requirements
- › Water harvesting and filtration systems/water cycle management
- › Processing and supply chain skills underpinned by new technologies, world class research and development

### REPORTED LABOUR SHORTAGES

- › Butcher
- › Meat Carcass Assessor
- › Meat Inspector
- › Meat Packer
- › Meat Process Worker
- › Quality Assurance Personnel
- › Slaughterer, Boner and Slicer

### DELIVERY REQUIREMENTS

- › Full qualifications through traineeship pathways for new and existing workers
- › Skill Sets to support pathways to full qualifications and provide opportunities for upskilling post qualification
- › Integrated and innovative delivery of training combined with the diffusion and adoption of research findings to raise enterprise productivity



## RACING OVERVIEW

Comprises three codes: thoroughbred; harness and greyhound - the 'code' being the breed and type of animal which competes. While some workers are centrally employed in permanent conditions, the majority of the 117,000 people involved in the industry are self employed or part-time (trainers, jockeys, track riders, drivers and stable staff). Over 600 racecourses and more than 22,000 small/medium sized enterprises make up the industry, 95 per cent of which are in non metropolitan Australia.

### MAJOR CHALLENGES & TRENDS

- ▶ Ageing of the workforce, particularly jockeys
- ▶ Improving employment practices and instilling innovative and productive job roles, supported by meaningful career paths
- ▶ Growing contemporary industry leaders to drive culture change on workforce development
- ▶ Attracting, training and retaining workers at all skill levels
- ▶ Embedding occupational health and safety
- ▶ Linking skill development with industry licensing and compliance requirements

### NEW AND EMERGING SKILLS

- ▶ On-going need for occupational health and safety, risk management and biosecurity
- ▶ Small business management
- ▶ Animal behaviour, health, and welfare

### REPORTED LABOUR SHORTAGES

- ▶ Jockey and Harness Driver
- ▶ Race Steward
- ▶ Stablehand
- ▶ Trackrider
- ▶ Equine Dentist professionals, outside of the metropolitan areas

### DELIVERY REQUIREMENTS

- ▶ Building blocks approach to skills development in support of full qualifications
- ▶ Integrated and innovative delivery of skills



## SEAFOOD OVERVIEW

Comprises wild catch commercial fishing, aquaculture and post-harvest processing sectors. Directly employs over 17,200 people across the wild catch, harvesting and aquaculture sectors and a further 7,200 in processing and wholesale.

### MAJOR CHALLENGES & TRENDS

- ▶ Attracting, training and retaining workers at all skill levels - crew shortages and reducing enrolments increasing with emergence of oil and gas resource projects
- ▶ Evolving job roles which require higher, often technician orientated skills
- ▶ Linking skill development with industry licensing and compliance requirements
- ▶ Diffusing new practice and knowledge from research and development work into the workforce through formal training
- ▶ Ensuring occupational health and safety and food safety form an integrated approach to risk management
- ▶ Growing contemporary industry leaders and securing their engagement in skills and workforce development

### NEW AND EMERGING SKILLS

- ▶ Genetics, selective breeding and biotechnology
- ▶ Seafood processing, value adding, supply chain skills underpinned by new technologies
- ▶ Natural resource management
- ▶ Compliance and regulatory requirements
- ▶ Biosecurity, emergency pest and disease response
- ▶ Animal behaviour, health and welfare
- ▶ Market research and product promotion

### REPORTED LABOUR SHORTAGES

- ▶ Aquaculture Farmer
- ▶ Aquaculture Worker
- ▶ Coxswain
- ▶ Deck and Fishing Hand
- ▶ Fisheries Inspector
- ▶ Marine Engineer
- ▶ Occupational Diver
- ▶ Seafood Process Worker
- ▶ Skipper

### DELIVERY REQUIREMENTS

- ▶ Building blocks approach to skills development in support of full qualifications and in recognition of the logistical and seasonal nature of employment
- ▶ Integrated and innovative delivery of skills combined with the diffusion and adoption of research findings to raise enterprise productivity



## AGRICULTURE, HORTICULTURE AND CONSERVATION OVERVIEW

Comprises rural production (commonly referred to as 'agriculture'); amenity horticulture; conservation and land management; animal care and management. Over 460,000 people are directly employed across the sectors.

### MAJOR CHALLENGES & TRENDS

- › Widespread ageing of existing workforce
- › Attracting and retaining workers at skilled and semi-skilled levels
- › Attracting and skilling seasonal workers
- › Filling demand for technician and para professional job roles which can in turn drive greater adoption of innovative practice, new knowledge and technology
- › Building skilled, robust, regionally based labour pools in cooperation with co-located industries
- › Building enterprise understanding and capability in 'employer of choice' and high performing workplace practices
- › Growing environmentally sustainable production systems capable of delivering strong economic returns

### NEW AND EMERGING SKILLS

- › Carbon capture, storage and accounting
- › Biosecurity, emergency pest and disease response
- › Animal behaviour, health, and welfare
- › Natural resource management - biodiversity, sustainable management of land, water and vegetation
- › Water harvesting and filtration systems/ water cycle management
- › Supply chain management
- › Human resource management, marketing and business practice

### REPORTED LABOUR SHORTAGES

- › Aboriginal Land Manager
- › Agricultural and Horticultural Mobile Plant Operator
- › Agricultural Technician and Consultant
- › Agronomist
- › Animal Technician
- › Arborist
- › Conservation Officer
- › Crop Farm Worker
- › Environmental Scientist
- › Farm Manager
- › Garden and Nursery Worker
- › Gardener
- › Greenkeeper
- › Irrigation Technician
- › Landscape Gardener
- › Mixed Crop and Livestock Farmer
- › Park Ranger
- › Shearer
- › Soil Scientist
- › Veterinary Nurse

### DELIVERY REQUIREMENTS

- › Building blocks/incremental skills development in addition to full qualifications
- › Solutions oriented delivery of skills in partnership with Australia's innovation system to enable 'speed to market' diffusion and adoption of research findings, new knowledge and technology

## SECTION 3

# CURRENT IMPACT OF TRAINING PACKAGES

AgriFood Skills Australia maintains and continuously improves ten nationally endorsed Training Packages. Numbers of enrolled learners have risen across most industries for the first time since 2006 (figure 7), in part due to the end of drought conditions and increased employment numbers. It is also in response to the changes being made to traditional business models and the need for existing workers to gain higher level skills in areas such as sustainable operations, biosecurity, animal welfare and business skills more broadly.

During 2009 - 2010 the highly successful *Enterprise Based Productivity Places Program*<sup>13</sup> - brokered on behalf of the Australian Government by AgriFood Skills Australia - has contributed an additional 900 plus enrolments.

<sup>13</sup> *Enterprise Based Productivity Places Program* is a partnership between enterprises, the 11 Industry Skills Councils and the Australian Government. Its objective is to identify the higher level skill needs of existing workers at Certificate III to Advanced Diploma level and access joint government and enterprise funded training places for the relevant nationally endorsed qualification.



### AGRIFOOD LEARNER PROFILE

No typical learner profile exists within agrifood due to the diversity of its 40 plus sectors and complex demographic:

- ▶ 57% of workers are based in regional and remote Australia
- ▶ 68% of the workforce is male
- ▶ Employers range from large scale multi-nationals through to family owned micro businesses
- ▶ Operations are located in terrestrial and water based environments
- ▶ Employment ranges from casual, seasonal through to permanent full-time
- ▶ High-level science and technology focussed occupations through to basic labouring roles
- ▶ 10% of 2009 agrifood students (8,933) were still at school, 8.1% of agrifood students were Indigenous Australians (6,734)
- ▶ Significant proportion of workers with low levels of language, literacy and numeracy
- ▶ High numbers of workers from non-English speaking backgrounds
- ▶ Sub-culture of learning which is developmental, life-long and situational.





**Figure 7. VET student enrolments and completions by AgriFood Skills Australia Training Package**

AgriFood Training Package		2005	2006	2007	2008	2009	Enrolment trend from 2008
		Number of students					
AGR Agrifood	students	–	–	34	27	33	▲ +5
	completions	–	–	–	13	(a)	
FDF Food Processing	students	14,424	13,322	14,336	12,275	10,357	▼ -1918
	completions	3,506	2,840	3,718	3,032	(a)	
MTM Meat	students	12,470	12,457	11,171	11,481	12,165	▲ +684
	completions	3,082	3,851	3,966	3,760	(a)	
RTD Conservation and Land Management	students	7,862	8,245	7,249	7,409	8,800	▲ +1391
	completions	1,382	1,333	1,424	1,555	(a)	
RTE Rural Production (includes RUA)	students	18,316	20,912	19,191	20,132	20,696	▲ +564
	completions	3,293	3,647	3,726	4,074	(a)	
RTF Amenity horticulture (includes RUH)	students	22,564	21,030	20,717	19,383	20,575	▲ +1192
	completions	4,898	4,636	4,869	5,252	(a)	
RUV Animal Care and Management	students	4,007	4,507	5,444	6,394	7,105	▲ +711
	completions	1,402	1,560	1,630	2,166	(a)	
RGR Racing	students	1,039	1,422	1,251	1,288	1,612	▲ +324
	completions	340	375	356	467	(a)	
SFI Seafood	students	2,220	2,311	3,013	2,478	2,098	▼ -380
	completions	527	564	395	433	(a)	
SUG Sugar Milling	students	103	79	4	–	56	▲ +56
	completions	2	–	–	–	(a)	
<b>Total students</b>		<b>83,005</b>	<b>84,085</b>	<b>82,410</b>	<b>80,867</b>	<b>83,497</b>	▲ 2,630
<b>Total course completions</b>		<b>18,432</b>	<b>18,807</b>	<b>20,084</b>	<b>20,752</b>	<b>(a)</b>	

Source: NCVER

(a) unavailable at the time of analysis

There does however, remain a significant disconnect between how regional Australia learns and how the National Training System offers, plans and funds training. Between 2005 and 2009 agrifood employers recorded dissatisfaction ratings of at least double other industries.

In simple terms, the currency of the system is full qualifications. COAG's \$6.7b Intergovernmental *Skills and Workforce Development Agreement* underpins the national system and by 2020 aims to halve the proportion of 20-64 year olds without qualifications at Certificate III level, and double the number of higher qualification completions. This target and the large sums of funding that flow in its pursuit have shaped policy and programs across the jurisdictions and reinforce the 'full qualification' orientation of the system.

In stark contrast sits the learning culture of the majority of agrifood sectors, which is developmental, socially embedded and occurs over a lifetime. This incremental, building blocks approach to learning is sometimes interpreted as an aversion to full qualifications or commitment to skills. On the contrary, industry's commitment to new knowledge and skills through Australia's research and innovation system has been its basis for continued economic growth, much of which is based on co-investment.

By way of illustration, individual unit of competency completion rates across the various agrifood sectors are generally very high at around 85 per cent - and far in excess of most other industries (figure 8). But less than a quarter of these same students go on to complete the full qualification.



Jeff Bambach, student in Certificate III in Agriculture.

**Figure 8. Unit of competency completion rate by AgriFood Skills Australia Training Package - 2009**

Code	Training Package	Unit of competency completion rates	Unit of competency enrolments
AGF	AgriFood	87.3%	418
FDF	Food Processing	87.1%	81,789
MTM	Meat	85.7%	117,568
RGR	Racing	83.7%	11,613
RTD	Conservation and Land Management	82.8%	66,438
RTE	Rural Production	90.3%	141,266
RTF	Amenity Horticulture	82.0%	186,166
RUV	Animal Care and Management	79.6%	59,371
SFI	Seafood	85.6%	20,701
SUG	Sugar Milling	100.00%	101
<b>All AgriFood Skills Training Packages</b>		<b>85.6%</b>	<b>685,431</b>
<b>All Training Packages (in comparison)</b>		<b>78.4%</b>	<b>15,117,595</b>

Source: NCVET

The culture of incremental learning is prevalent across Regional Australia - not just agrifood - and follows a clear and significant pattern. Course completion rates across all industries decline with increasing remoteness: with students in major cities more than twice as likely to complete as those students living in remote or very remote areas.

Throughout consultation for the 2011 Environmental Scan, enterprises and industry bodies alike have continued their calls for the pro-active and systemic funding and delivery of Skills Sets, individual units of competency *and* full qualifications.

## SECTION 4

# FUTURE DIRECTIONS FOR ENDORSED COMPONENTS OF TRAINING PACKAGES

A significant focus of AgriFood Skills Australia's workplan over the last three years has been its formal review of seven of its ten Training Packages, involving the analysis of over 1800 units of competency and 175 qualifications.

2011 will now see this effort and resources shift to supporting implementation of the reviewed Training Packages across Australia, and using the formal Continuous Improvement process to respond to new or emerging issues.

### IMPLEMENTATION OF NEWLY REVIEWED TRAINING PACKAGES

A key priority of AgriFood Skills Australia is the development of relevant and useful implementation strategies that support consistent, high quality delivery and assessment of the newly reviewed Training Packages by the National Training System.

Work has commenced on development of an 'Implementation Support Framework' within which a range of strategies and products will be made available to industry, occupational regulators, vocational education and training regulators, and training providers. Each of these audiences has different information needs depending on its role and level of engagement with the training sector and will drive an audience specific approach to the development of the Implementation Support Framework.

AgriFood Skills Australia is also looking forward to engaging with state based initiatives to support implementation through stronger partnerships with industry training advisory bodies and state and territory governments.

Information and updates on the Implementation Support Framework will be available from the *AgriFood Skills Australia website* throughout 2011.

### CONTINUOUS IMPROVEMENT OF TRAINING PACKAGES

Training Packages are initially endorsed for a three year period and once formally reviewed, are typically maintained through the nationally agreed process for continuous improvement. This enables Training Packages - the qualifications and units of competency they comprise - to respond to new and emerging needs and reflect current industry practice.

Balancing the responsiveness of this process with the risk of creating a perpetual state of change for industry and the VET system is a major issue and one which is increasingly complex given that qualifications and units of competency are being embedded in licensing, job design and career pathways.

It is a responsibility that AgriFood Skills Australia takes extremely seriously and during 2010-2011 is implementing a more transparent process for managing the continuous improvement process. This includes improved decision-making structures to prioritise future activity, and the maintenance and promotion of its Continuous Improvement Register on the *AgriFood Skills Australia website*.

Areas of skill/knowledge already identified for revision or development during 2011 include:

- › Animal Control and Regulation
- › Animal Technology
- › Aquaculture Operations
- › Biosecurity including Emergency Response
- › Certified Seed Production
- › Equine Dentistry
- › Equine Nursing
- › Flour Milling
- › Indigenous Land Management
- › Irrigation and Irrigation Design
- › Malting and Brewing
- › Organic Farming
- › Performance Horse Management
- › Pet Grooming
- › Sports Turf Management
- › Sugar Milling
- › Sustainable Operations
- › Viticulture

### STREAMLINED TRAINING PACKAGE STRUCTURE

At its last meeting of 2010, the National Quality Council<sup>14</sup> endorsed a new design and structure for Training Packages (figure 9). This reform is a key priority for the VET Products for the 21st Century project and culmination of two years of research and consultation by the NQC.

14 The National Quality Council is a Committee of the Ministerial Council. It has specific decision-making powers for the two pillars of the National Training System - Training Packages (industry's agreed outcomes) and the Australian Quality Training Framework (the minimum standards for training and assessment with which Registered Training Organisations must comply). In 2009, the Council of Australian Governments (COAG) agreed to establish National VET Regulator (NVR) and National Standards Council. The NVR is due to commence operations in July 2011.



**Figure 9. National Quality Council decision of 9 December 2010 on streamlined Training Packages**

Streamlined Training Packages are to be characterised by **simplified** language, and **shortened** and appropriately **segmented** content that will address concerns of Training Packages becoming too complex, bulky and difficult to use.

- ▶ **UNITS OF COMPETENCY** will be simplified to be an expression of performance standards only.
- ▶ **ASSESSMENT REQUIREMENTS** are to be strengthened and given their own section, with performance and knowledge evidence linked to the elements and performance criteria in the unit of competency.
- ▶ Required skills will be expressed in **ELEMENTS** and **PERFORMANCE CRITERIA**.
- ▶ **FOUNDATION SKILLS** will be explicitly listed in the unit of competency.
- ▶ The range statement is to be renamed **RANGE OF CONDITIONS** and reflects context and operating conditions only.

Source: National Quality Council

AgriFood Skills Australia is a longstanding advocate of simplification and streamlining in its bid to drive greater adoption and use of Nationally Recognised Training by industry.

This policy directive represents a major undertaking. Again, AgriFood Skills Australia will keep stakeholders updated on this policy and its implications for the Training Packages under its coverage throughout 2011 via its website and direct communication.

## CASE STUDY

# COMBINING NATIONALLY RECOGNISED TRAINING AND RESEARCH TO DELIVER RESULTS FOR MANBULLOO

### BACKGROUND

Manbulloo Ltd was established in September 2005 when three mango plantations amalgamated near Katherine in the Northern Territory and south of Townsville in far north Queensland. It is now one of the largest mango producers in Australia supplying the domestic and overseas markets including New Zealand, Asia, Middle East, Europe and the United Kingdom from late September to late December.

Manbulloo is expanding all aspects of its operations including infrastructure and forming alliances with other producers to expand the range of varieties grown and supply period.

### PROBLEM

In 2010, the company planned to export to more than 15 countries but had serious concerns about meeting the stringent quality requirements of its export markets and incorporating changes to its export packaging system using seasonal workers.

Manbulloo's managing director, Marie Piccone, recognised training was critical to achieving the company's goals. As a former horticulture extension officer, she had witnessed firsthand its value to an organisation.

### SOLUTION

Fortunately, Manbulloo was selected for a pilot study to help it address its quality system challenges. Training was offered as part of its participation in the Global Mango Export Development project supported by the Global Markets Initiative of the Queensland Department of Employment, Economic Development and Innovation (DEEDI), the Australian Mango Industry Association and Horticulture Australia Ltd.

### IMPLEMENTATION

DEEDI and Australian Agricultural College Corporation (AACC) extension officers collaborated to develop and deliver a program which combines a unit of competency from Certificate I in Rural Operations with the latest research and knowledge on quality generated by DEEDI.

Delivery targeted packing shed and field staff while Manbulloo position descriptions helped develop site specific assessment tools which took into account the company's needs including:

- ▶ improving the harvest quality of its mangoes
- ▶ delivered just in time for the 2010 picking season
- ▶ making training user-friendly for the diverse educational levels and backgrounds of pickers
- ▶ ensuring training was accredited to build capacity and expertise within the company to assist it to reach into further markets.

Training was carried out by DEEDI, AACC and Manbulloo staff before harvest began with workers assessed in the field and packing shed.

### OUTCOME

Manbulloo made significant improvements during the season including a 65 per cent reduction in harvest damage. The performance of its quality management system was the best since the company was formed. "Very little out-of-grade fruit appeared in the trays and we did not have any repacks. We probably had a 10 per cent reduction in our quality issues," Piccone said.

### CRITICAL SUCCESS FACTORS

Cooperation and goodwill between AACC and DEEDI and the commitment of Manbulloo to the training has underpinned the pilot's success.

AACC's knowledge and DEEDI's expertise enabled Nationally Recognised Training which incorporated the latest practices, innovation and research. The Department of Employment and Training was also a key enabler providing funding to ensure that training was delivered where and when it was needed by its client.

DEEDI extension officer Scott Ledger said: "Nationally recognised training enabled quick transfer of new knowledge from the latest R&D into the workplace, improving productivity and efficiency on mango farms and leaving workers with formal recognition of their skills."

### IMPLICATIONS FOR INDUSTRY

Manbulloo's 2010 season got off to a smoother start than previous years due to extensive pre-season planning, preparation and specialist harvest and packing training. Nationally Recognised Training will now be a permanent feature of the company's harvest practice.

Benefits of the training flow beyond the company with the knowledge and skills transferable and can be used to gain employment on other mango farms.

The pilot study has led to interest from other producers and the Australian Mango Industry Association. The strategy developed for Manbulloo by AACC and DEEDI provides the basis for an industry-wide training program that not just upskills the workforce and delivers immediate benefits to farm profitability but also improves the long-term viability of the mango industry.



Manbulloo mangoes - where Nationally Recognised Training is combined with the latest research and development on quality - an approach that is delivering immediate benefits to farm profitability and gives seasonal workers portable recognition.

# APPENDIX A

## CONTINUOUS IMPROVEMENT OF TRAINING PACKAGES OVER PREVIOUS 12 MONTH PERIOD

In the 12 month period to February 2011, AgriFood Skills Australia has worked in partnership with industry to incorporate the latest skills and knowledge into the nationally endorsed qualifications and units of competency which fall under its coverage. Much of this work has been in direct response to industry's evolving job roles and the new skills required by the existing workforce to meet several of the macro and micro factors set out in the early sections of the Environmental Scan.

AgriFood Skills Australia has also worked to streamline and increase the flexibility of its Training Packages in response to Council of Australian Governments policy to embed 'green skills' in all Training Package qualifications; and National Quality Council policy whereby one-third or more of any nationally endorsed qualification must now be comprised of electives.

Formal reviews of five Training Packages have concluded, resulting in:

- ▶ The **new Animal Care and Management Training Package ACM10** which replaces the previous Animal Care and Management Training Package RUV04
- ▶ The **new Agriculture, Horticulture and Conservation and Land Management Training Package AHC10** which replaces three of the reviewed Training Packages - Rural Production RTE03; Amenity Horticulture RTF03; and Conservation and Land Management RTD02
- ▶ The **new Food Processing Training Package FDF10** which replaces the previous Food Processing Training Package FDF03

TRAINING PACKAGE	ACM10 Animal Care and Management			
Brief Summary Of Change	Industry Imperatives/Rationale For Change	Date Submitted To NQC Secretariat	Date Endorsed By NQC/Or ISC Upgrade	Date Made Public Through NTIS
Full review of previous Animal Care and Management Training Package RUV04 completed	Industry requirement to review components for currency of practice	4 June 2010	28 June 2010	11 November 2010
Audit of Green Skills and amendment to qualification packaging rules completed	COAG & NQC policy requirement			

TRAINING PACKAGE	AHC10 Agriculture, Horticulture and Conservation and Land Management			
Brief Summary Of Change	Industry Imperatives/Rationale For Change	Date Submitted To NQC Secretariat	Date Endorsed By NQC/Or ISC Upgrade	Date Made Public Through NTIS
Full review of previous Training Packages completed: Conservation and Land Management RTD02, Rural Production RTE03 & Amenity Horticulture RTF03	Recognition of new job roles, specialised skills and new practices throughout the industry	18 October 2010	22 November 2010	<i>In progress</i>
Audit of Green Skills and qualification packaging rules completed	In response to NQC policy directive on qualification packaging rules and COAG requirement for the embedding of green skills in all nationally endorsed qualifications.			
Review of Feed Lot AQF III qualifications for packaging rules compliance	In response to NQC policy directive on qualification packaging rules	4 March 2011	<i>In progress</i>	

TRAINING PACKAGE	AHC10 Agriculture, Horticulture and Conservation and Land Management			
------------------	--	--	--	--

Review of Commercial Seed Processing AQF III qualification for packaging rules compliance	In response to NQC policy directive on qualification packaging rules	ISC Upgrade	4 March 2011	
---	--	-------------	--------------	--

TRAINING PACKAGE	FDF10 Food Processing			
------------------	-----------------------	--	--	--

Brief Summary Of Change	Industry Imperatives/Rationale For Change	Date Submitted To NQC Secretariat	Date Endorsed By NQC/Or ISC Upgrade	Date Made Public Through NTIS
-------------------------	---	-----------------------------------	-------------------------------------	-------------------------------

Full review of previous Food Processing Training Package FDF03 completed	Recognition of new job roles, specialised skills and new practices throughout the industry	6 October 2010	27 October 2010	<i>In progress</i>
--	--	----------------	-----------------	--------------------

Audit of Green Skills and amendment to qualification packaging rules completed	In response to NQC policy directive on qualification packaging rules and COAG requirement for the embedding of green skills in all nationally endorsed qualifications			
--	---	--	--	--

At the time of writing, two further Training Packages are coming to the end of a formal review and will result in:

- ▶ **Meat Training Package MTM11** which will replace the previous Meat Training Package MTM07
- ▶ **Seafood Training Package SFI11** which will replace the previous Seafood Training Package SFI04.

# APPENDIX B

## METHODOLOGY AND REFERENCES

2011 is the fourth year AgriFood Skills Australia has produced an Environmental Scan. Its frequency necessitates consultation within eight months of finalising the previous year's version and significantly shapes the methodology and how we gather our intelligence.

Stakeholders, particularly enterprises and peak industry bodies, need to see how their earlier input has influenced the system for the better. State based Industry Training Advisory Bodies (ITABs) - many of which now have a broader skills and workforce development role - have also been on the road over recent months asking similar questions of industry as a basis for their reports to State Training Authorities. They need to be assured that the process for the Environmental Scan will not duplicate recent work or confuse industry. Several industry peak bodies and associations have also produced strategic plans throughout the year with a skills or workforce component.

Cognisant of these issues and that the Environmental Scan concept is about optimising the intelligence captured throughout the year, AgriFood Skills Australia's methodology brings together conversations, background research and uses targeted interviews with key stakeholders to explore issues in more detail. Our five Standing Committees are a valuable source of input, as is the advice and feedback gathered throughout our work with enterprises and during the continuous improvement of Training Packages.

We use an open submission process (as distinct from surveys) to provide stakeholders with the opportunity to submit key reports and fully articulate their issues. We have sought to optimise the work of local ITABs where relevant and robust. In addition, AgriFood Skills Australia undertakes an extensive desktop analysis nationally and internationally of trends and industry developments.

## BIBLIOGRAPHY

- ▶ ACIL Tasman (2010) *Developing the Narrabri Workforce: An assessment of the potential impact of the Workforce Development Strategy in Narrabri*, ACIL Tasman, Melbourne
- ▶ AECGroup (2010) *Towards a better understanding of current and future human resource needs in Australian Agriculture*, Australian Farm Institute, Sydney
- ▶ Apprenticeships for the 21st Century Expert Panel (2011) *A shared responsibility - Apprenticeships for the 21st Century*, Commonwealth of Australia, Canberra
- ▶ Australian Food and Grocery Council (2010) *State of the Industry 2010 - Essential information: facts and figures*, AFGC, Canberra
- ▶ Belt V & Giles L. (2009) *High Performance Working: A Synthesis of Key Literature*, UK Commission for Employment and Skills, London
- ▶ Brown L R. (2009) *Selling Our Future : Mobilizing to Save Civilization*, W.W. Norton & Company, New York
- ▶ CSIRO (2010) *State of the Climate*, Bureau of Meteorology, Canberra
- ▶ Department of Agriculture, Fisheries and Forestry (2010) *Australia's Agriculture, Fisheries and Forestry - At a Glance 2010*, DAFF, Canberra
- ▶ Eberstadt N. (2010) *The Demographic Future; What Population Growth - and Decline - Means for the Global Economy*, Foreign Affairs, New York
- ▶ Ecker S. et al (2010), *Drivers of regional agritourism and food tourism in Australia*, ABARE-BRS, Canberra
- ▶ Evans C. (2010) Media Release: *Australia's Horticulture Industry to benefit from adjustments to the Pacific Seasonal Worker Pilot Scheme*, Department of Education, Employment and Workplace Relations, Canberra
- ▶ FRDC (2010) *Investing for tomorrow's fish: the FRDC's Research, Development and Extension Plan 2010-2015*, Fisheries Research and Development Corporation, Canberra
- ▶ Gillard J. (2010) *Fair dinkum: the digital ambition*, The Economist, London
- ▶ Knight B. (2011) *Statistics and analysis for the AgriFood Skills Australia Environmental Scan*, National Centre for Vocational Education Research, Adelaide
- ▶ Levi M et al. (2010) *Globalising the Energy Revolution: How to Really Win the Clean-Energy Race*, Foreign Affairs, New York
- ▶ Milliken R. (2010) *Two speed Australia*, The Economist, London
- ▶ NFF (2011) *Farm Facts 2011 - Modern farming's economic, environmental and social contribution to Australia*, National Farmers' Federation, Canberra
- ▶ National Resources Sector Employment Taskforce (2010) *Resourcing the Future - Technical Paper*, Commonwealth of Australia, Canberra
- ▶ National Resources Sector Employment Taskforce (2010) *Resourcing the Future - Report*, Commonwealth of Australia, Canberra
- ▶ Natural Resource Management Ministerial Council (2010), *Australia's Biodiversity Conservation Strategy 2010-2030*, Australian Government, Department of Sustainability, Environment, Water, Population and Communities, Canberra
- ▶ Netbalance (2010) *Green Shopper Summary Report - Australian Food and Grocery Council 2010*, AGFC, Canberra
- ▶ OECD (2009) *How Regions Grow: Trends and Analysis*, Organisation for Economic Cooperation and Development, Paris
- ▶ Parker J. (2010) *Another year, another billion*, The Economist, London
- ▶ PISC (2010) *Review of the Skilled Occupations List - Agrifood Industry - Primary Industries Sector*, Primary Industries Skills Council, Adelaide
- ▶ PMSEIC (2010) *Australia and Food Security in a Changing World*, The Prime Minister's Science, Engineering and Innovation Council, Canberra, Australia
- ▶ Reed C. et al (2010) *Interim evaluation of the Pacific Seasonal Worker Pilot Scheme*, DEEWR, Canberra

- Rural Research and Development Council (2010) *Draft National Strategic Rural Research and Development Investment Plan*, RRDC, Canberra
- Skills Tasmania (2010) *Racing Industry Skills Plan 2010 - 2012*, Hobart
- Smith L. & Clayton B. (2009) *Recognising non-formal and informal learning: Participant insights and perspectives*, NCVET, Adelaide
- South Australian Government (2010) *South Australian Food Strategy 2010-2015*, SA Government, Adelaide
- TEEB (2010) *The Economics of Ecosystems and Biodiversity: Ecological and Economic Foundations*, Earthscan, London
- Thurow R. (2010) *The Fertile Continent - Africa, Agriculture's Final Frontier*, The Economist, London
- Myers P. (2011) *Unlikely Alliance*, Sydney Morning Herald

#### **Daily Media bulletin**

October 2010 - February 2011

#### **Major Daily broadsheets**

December 2010 - February 2011

#### **Online**

- ABC Radio National - FutureTense - [www.abc.net.au](http://www.abc.net.au)
- ABARE - [www.abareconomics.com](http://www.abareconomics.com)
- ABC Rural - [www.abc.net.au](http://www.abc.net.au)
- Australian Fisheries Management Authority - [www.afma.gov.au](http://www.afma.gov.au)
- Australian Food and Grocery Council - [www.afgc.org.au](http://www.afgc.org.au)
- Australian Food News - [www.ausfoodnews.com.au](http://www.ausfoodnews.com.au)
- Commonwealth Scientific and Industrial Research Organisation - [www.csiro.au](http://www.csiro.au)
- Croplife Australia - [www.croplifeaustralia.org.au](http://www.croplifeaustralia.org.au)
- Evocities - [www.evocities.com.au](http://www.evocities.com.au)
- Permaculture Research Institute of Australia - [www.permaculture.org.au](http://www.permaculture.org.au)
- Dairy Australia - [www.dairyaustralia.com.au](http://www.dairyaustralia.com.au)
- Department of Agriculture, Forestry and Fisheries - [www.daff.gov.au](http://www.daff.gov.au)
- Earth Policy Institute - [www.earth-policy.org](http://www.earth-policy.org)
- Food and Agriculture Organization of the United Nations - [www.fao.org](http://www.fao.org)
- Landline - [www.abc.net.au/landline](http://www.abc.net.au/landline)
- Meat and Livestock Australia - [www.mla.com.au](http://www.mla.com.au)
- National Farmers Federation - [www.nff.org.au](http://www.nff.org.au)
- Rural Industries Research and Development Corporation - [www.rirdc.gov.au](http://www.rirdc.gov.au)
- Victorian Racing Club - [www.vrc.net.au](http://www.vrc.net.au)
- World Nuclear Association - [www.world-nuclear.org](http://www.world-nuclear.org)
- Energy Matters - [www.energymatters.com.au](http://www.energymatters.com.au)
- Medicines Australia - [www.medicinesaustralia.com.au](http://www.medicinesaustralia.com.au)
- Lusche Urban Greening - [www.lusche.com.au](http://www.lusche.com.au)

#### **Submissions to the scan during November - December 2010 included:**

- ACE North Coast Community Colleges
- Arboriculture Australia
- Australian Meat Industry Council
- C-AID Consultants
- CY O'Connor Institute
- Envirotech Institute of Education
- Food Fibre Timber Industries Training Council WA
- Food, Tourism & Hospitality Industry Skills Advisory Council SA
- Growcom
- Horticultural Training Pty Ltd
- Horticultural Skills Australia
- Irrigation Australia
- Manufacturing Skills Queensland
- MINTRAC
- National Association of Agriculture Educators
- National Baking Industry Association
- National Industry Advisory Group for Veterinary Nursing
- Primary Industries Skills Council SA
- Primary Skills Victoria
- Racing Queensland
- Queensland Aquaculture Skills Formation Strategy
- Queensland Department of Employment, Economic Development and Innovation
- Queensland Strawberries
- Victorian Department of Primary Industries
- Victorian Food Industry Training Board

#### **Stakeholder interviews and consultation from October 2010 - January 2011 included:**

- Australian Food and Grocery Council
- Australian Institute of Horticulture
- Australian Wine Federation
- Council of Rural Research and Development Corporations
- Department of Education and Training NT
- Department of Innovation, Industry and Regional Development
- Department of Primary Industries and Resources SA
- Fisheries Research and Development Corporation
- Food Fibre Timber Industries Training Council WA
- Food, Tourism & Hospitality Industry Skills Advisory Council SA
- Horticulture Australia
- Irrigation Australia
- National Farmers' Federation
- Northern Territory Seafood Council
- NT Cattlemen's Association
- Nursery and Garden Industry Australia

- ▶ Primary Industries Education Foundation
- ▶ Primary Industries Training Advisory Council NT
- ▶ Primary Skills Victoria
- ▶ Queensland Department of Employment, Economic Development and Innovation
- ▶ Racing Victoria Limited
- ▶ Rural Skills Australia network
- ▶ Victorian Food Industry Training Board

**Our conversations included:**

- ▶ AgriFood Skills Australia national conference, September 2010 - attended by 200 representatives from industry, employer and employee peak bodies, training providers and enterprises
- ▶ AgriFood Skills Australia business model and consultative structure of five sector (over 60 representatives) based standing committees and other networks which have provided on-going advice and input to the ISC's activities throughout 2010-2011
- ▶ AgriFood Skills Australia's Skills Provider Reference Group comprising private and public training providers considered to be leaders in their respective fields
- ▶ Canvassing AgriFood's 3,000+ stakeholder database for written submissions to the process, to generate a deeper and richer understanding of key issues from industry bodies, enterprises and training providers
- ▶ On-going informal conversations with enterprise leaders and workforce managers throughout 2010-2011 in the continuous improvement of Training Packages regarding evolving and new job roles, new skills and skilling solutions
- ▶ Participation/presentation at industry conferences/events including:
  - ABARE Conference
  - AquaEd Conference

- Food Fibre and Timber Industries Training Council (WA) Inc RTO Forum - 'Supporting Industry Workforce Development'
- MINTRAC Conference
- National Agriculture, Horticulture & Conservation and Land Management Providers' Network Conference
- NSW Association of Agriculture Teachers' Conference
- NSW Government Jobs Summit
- Primary Industries Ministerial Council meeting
- Racing Industry National Training Conference
- Sustaining Rural Communities Conference
- Victorian Agriculture, Horticulture & Conservation and Land Management Providers' Network Conference

**AgriFood Skills Australia submissions:**

- ▶ Skills Australia - Review of the Skilled Occupation List
- ▶ Productivity Commission - Review of Rural Research and Development Corporations
- ▶ LH Martin Institute for Higher Leadership and Management - Study of the Quality of Teaching in VET
- ▶ Local Government Indigenous Employment Program Green Paper - Closing the gap through place-based employment
- ▶ Department of Education, Employment and Workplace Relations - An Indicator Framework for Higher Education Funding
- ▶ Skills Australia - Creating a Future Direction for Australian Vocational Education and Training

**AgriFood Skills Australia position papers on:**

- ▶ Foundation skills
- ▶ Indigenous engagement
- ▶ National Broadband Network

# APPENDIX C

## OCCUPATIONS AND QUALIFICATIONS IN DEMAND

### IMPORTANT - BEFORE CONSIDERING THIS ADVICE

The following table is a mandated requirement of the Environmental Scan. It requires the trends outlined in the formative section of the Scan be translated into occupational demand and corresponding qualification.

For agrifood, the macro and micro factors set to impact on industry and its workforce fall into two broad areas for action:

1. The need for **new entrants** at skilled, semi-skilled and lower skilled levels across a wide range of occupations in response to existing shortages, to counter the leakage of existing workers to the resources sector and replace the large numbers of workers scheduled to retire;
2. The need to up-skill **existing workers** in a range of specific skills.

In certain sectors and for certain occupations, full qualifications are the preferred solution, particularly where traineeships or apprenticeships are a recognised and valued employment based pathway into industry for new entrants.

But for many sectors - most especially where job roles are rapidly evolving and existing workers need to be upskilled as a consequence - the required response is typically an incremental 'building blocks' approach to the acquisition of skills rather than full qualifications. This reflects industry's long established learning culture which is developmental, socially embedded and occurs over a lifetime. It also recognises that a number of Australia's key strategic agendas - sustainable practice, biosecurity, biodiversity, animal

welfare and water management - will be driven by building the capabilities of large sections of the agrifood workforce through short, sharp injections of new skills and knowledge.

Consultations for this year's Scan have again heard widespread calls from industry for the funded delivery of recognised Skills Sets and individual units of competency. It is however, an approach which remains largely at odds with the National Training System where full qualifications are the dominant currency by which it plans, offers and funds public provision, and has been further reinforced by the Council of Australian Governments' targets for educational attainment (full qualifications).

Presenting advice on occupational demand is further complicated by the need to translate it according to ANZSCO coding, the role of which is to define jobs and occupations according to level of skill and specialisation. Rapid evolution of many agrifood job roles over recent years has left several ANZSCO classifications failing to keep pace with the higher skill levels of many jobs. Worse still, several of the newer and emerging job roles key to industry's future, such as irrigation designers, animal and plant technicians, fall into amorphous categories and make even harder the identification of workforce numbers, provision of training and skilled migration status.

AgriFood Skills Australia has undertaken much research over the last three years on ANZSCO's capacity to reflect the current profile of the industry, its limitations and the consequences given its widespread use as a baseline classification for decision making across governments. To better reflect the actual job role in demand, a third column has therefore been added to the following table which provides the terminology more easily recognised by industry, and flags where a discrepancy of skill level and/or definition exists.

Because of these two issues - the citation of full qualifications and use of ANZSCO - **it is strongly recommended that the following advice be read in consultation with AgriFood Skills Australia and the relevant enterprise to determine the specific need of the learner.**

## FOOD, BEVERAGES AND PHARMACEUTICALS

ANZSCO Code	ANZSCO Occupation Title	Recognised Job Role	Qualifications	Justification/evidence
234212	Food Technologist	Food Technologist	FDF50110 Diploma of Food Processing	Ongoing shortages cited by enterprises and industry bodies. Set to increase due to growing pressure and trends for nutritious food. Declining numbers in food science undergraduates may be mitigated through VET pathways
251311	Environmental Health Officer	Food Safety Auditor Food Safety Officer	FDF41007 Certificate IV in Food Processing (Food Safety Auditing) FDF30110 Certificate III in Food Processing	Increasing regulation, biosecurity and licensing driving increased demand. Confirmed with industry bodies and at local level
311313	Primary Products Inspectors	Quarantine Officer		Restructure of Australia's biosecurity framework and approach will necessitate increased training effort
351111	Bakers	Baker	FDF30610 Certificate III in Retail Baking (Bread) FDF30710 Certificate III in Retail Baking (Combined)	National and long standing shortage confirmed in consultations and submissions
351112	Pastrycooks	Pastrycook	FDF30510 Certificate III in Retail Baking (Cake and Pastry)	National and long standing shortage confirmed in consultations and submissions
831111	Baking Factory Worker	Bakery Worker	FDF20110 Certificate II in Food Processing FDF30310 Certificate III in Plant Baking	National and long standing shortage confirmed in consultations and submissions
831114	Dairy Products Maker	Cheese Maker	FDF30110 Certificate III in Food Processing	Regional need identified in consultations and submissions

## MEAT INDUSTRY

ANZSCO Code	ANZSCO Occupation Title	Recognised Job Role	Qualifications	Justification/evidence
311312	Meat Inspector	Meat Inspector	MTM30307 Certificate III in Meat Processing (Meat Safety) MTM40207 Certificate IV in Meat Processing (Meat Safety)	Continuing and very high demand for existing worker training in response to ageing worker profile and regulatory changes which increase the need for enterprise employed Meat Inspectors

ANZSCO Code	ANZSCO Occupation Title	Recognised Job Role	Qualifications	Justification/evidence
351211	Butchers or Smallgoods Makers	Butcher Smallgoods Maker	MTM30807 Certificate III in Meat Processing (Meat Retailing) MTM30907 Certificate III in Meat Processing (Smallgoods - General) MTM31007 Certificate III in Meat Processing (Smallgoods - Manufacture)	Continuing and very high demand for new entrant and existing worker training nationally in response to ageing worker profile and shortage of tradespeople. Long standing shortage confirmed through last four Environmental Scan consultations. Confirmed through consultations and submissions
831211	Meat Boner and Slicer	Boner Slicer	MTM30107 Certificate III in Meat Processing (Boning Room)	Continuing and very high demand for existing worker training nationally in response to ageing worker profile and shortage of tradespeople. Confirmed through consultations and submissions
831212	Slaughterer	Slaughterer	MTM30507 Certificate III in Meat Processing (Slaughtering)	Continuing and very high demand for existing worker training nationally in response to ageing worker profile and shortage of tradespeople. Confirmed through consultations and submissions
831311	Meat Process Worker	Meat Processing Labourer Meat Wholesaling Labourer	MTM20107 Certificate II in Meat Processing (Abattoirs) MTM20407 Certificate II in Meat Processing (Food Services) MTM20207 Certificate II in Meat Processing (Smallgoods) MTM30207 Certificate III in Meat Processing (Food Services)	Continuing and very high demand for new entrants through employment based training pathway. Confirmed through consultations and submissions
832114	Meat Packer	Meat Packer	MTM20107 Certificate II in Meat Processing (Abattoirs)	Continuing and very high demand for new entrants through employment based training pathway. Confirmed through consultations and submissions
8393	Product Quality Controller	Quality Assurance Personnel	MTM30607 Certificate III in Meat Processing (General) MTM40307 Certificate IV in Meat Processing (Quality Assurance)	Continuing high demand for existing workers through employment based training pathway. Confirmed through consultations and submissions
839312	Product Grader	Meat Carcase Assessor	MTM40307 Certificate IV in Meat Processing (Quality Assurance)	Continuing high demand for existing workers through employment based training pathway. Confirmed through consultations and submissions
851299	Food Trades Assistant nec	Butchers Assistant	MTM20307 Certificate II in Meat Processing (Meat Retailing) MTM20407 Certificate II in Meat Processing (Food Services)	Medium level demand for new entrants and existing workers confirmed through consultations

## RACING

ANZSCO Code	ANZSCO Occupation Title	Recognised Job Role	Qualifications	Justification/evidence
361112	Horse Trainer	Horse Breaker	RGR40108 Certificate IV in Racing (Racehorse Trainer) RGR50108 Diploma of Racing (Racehorse Trainer)	Decline in numbers over the last decade is cited as a trigger for existing demand for new entrants
452318	Dog or Horse Racing Official	Race Steward Handicapper (Racing) Racing Administrator Chief Steward	RGR40608 Certificate IV in Racing Services (Steward) RGR40508 Certificate IV in Racing Services (Racing Administration) RGR50308 Diploma of Racing Services (Steward)	Ongoing shortage of new entrants and skilling of existing workers. Confirmed through consultations and submissions
452413	Jockey	Jockey Harness Driver	RGR40208 Certificate IV in Racing (Jockey) RGR40308 Certificate IV in Racing (Harness Race Driver)	Long standing shortage confirmed through last four Environmental Scans and compounded by ageing of jockeys. Confirmed through consultations and submissions
841516	Stablehand	Stablehand Trackrider	RGR20108 Certificate II in Racing (Stablehand) RGR30108 Certificate III in Racing (Trackrider)	Long standing shortage confirmed through last four Environmental Scans. Confirmed through consultations and submissions

## AGRICULTURE, HORTICULTURE, ANIMAL CARE, CONSERVATION AND LAND MANAGEMENT

ANZSCO Code	ANZSCO Occupation Title	Recognised Job Role	Qualifications	Justification/evidence
121	Farmers and Farm Managers	Rural Business Manager Mixed Crop Farmer Crop and Livestock Farmer Livestock Farmer Stud Beef Cattle Farmer	AHC50110 Diploma of Agriculture AHC51410 Diploma of Agribusiness Management AHC60110 Advanced Diploma of Agriculture AHC60310 Advanced Diploma of Agribusiness Management	Evolving nature of farming into rural business driving widespread need for greater 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 carbon sequestration, water management, animal welfare and biodiversity. Confirmed through advice from industry and government bodies during consultation process
121316	Horse Breeder	Horse Stud Manager Stud Master/ Mistress	AHC50110 Diploma of Agriculture	Regional shortages cited and confirmed in consultations and submissions
121318	Pig Farmer	Pig Farm Manager Pig Breeder	AHC50210 Diploma of Pork Production	Changing practices in animal handling and welfare will drive increased need for skill development of existing managers and workers. Confirmed through submissions

ANZSCO Code	ANZSCO Occupation Title	Recognised Job Role	Qualifications	Justification/evidence
234111	Agricultural Consultant	Agricultural Adviser Agricultural Extension Officer Landcare Officer Irrigation Designer (closest ANZSCO alignment)	AHC60110 Advanced Diploma of Agriculture AHC60310 Advanced Diploma of Agribusiness Management AHC50110 Diploma of Agriculture AHC51610 Diploma of Irrigation Management	Ongoing shortages of professionals cited by enterprises and industry bodies particularly in relation to irrigation design. Demand will increase due to natural resource management, lifting yields and sustainability pressures more broadly
234112	Agricultural Scientist	Agronomist	Sourced from Higher Education sector	National shortage of agronomists and recruiting from overseas. Confirmed through consultations and submissions and cited in multiple industry and government reports (Farm Institute, National Farmers' Federation, Office of the Chief Scientist)
234311	Conservation Officer	Environmental Officer Landcare Facilitator Indigenous Land Management Officer	AHC51110 Diploma of Conservation and Land Management	Australia's new Biodiversity Strategy, Carbon Farming Initiative and broader commitment to improved Natural Resource Management are all contributing to an increasing demand
234313	Environmental Research Scientist	Environmental Scientist Land Degradation Analyst Water Quality Analyst	Sourced from Higher Education sector	National shortage of research scientists and recruiting from overseas. Confirmed through consultations and submissions and cited in multiple reports (Australian Farm Institute, National Farmers' Federation, Office of the Chief Scientist)
234314	Park Ranger	Environment, Parks and Landcare Manager (skill alignment issue)	AHC51110 Diploma of Conservation and Land Management	Existing shortage expected to increase in line with growth of urban development and surrounding parklands. Confirmed in research and through submissions
234399	Environmental Scientist nec	Environmental Auditor Soil Scientist	Sourced from Higher Education sector	National shortage of research scientists and recruiting from overseas. Set to increase with proposals for Carbon Farming Initiative. Confirmed through consultations and submissions and cited in multiple industry and government reports (Farm Institute, National Farmers' Federation, Office of the Chief Scientist)

ANZSCO Code	ANZSCO Occupation Title	Recognised Job Role	Qualifications	Justification/evidence
311111	Agricultural Technician	Agricultural Technical Officer Agricultural Laboratory Technician Artificial Insemination Technical Officer Dairy Technician Poultry Technical Officer Herd Tester Field Crop Technical Officer Horticultural Technical Officer	AHC50110 Diploma of Agriculture AHC50310 Diploma of Production Horticulture AHC50410 Diploma of Horticulture	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. Confirmed through consultations and submissions
3611	Animal Attendants and Trainers	Animal Management Officer (closest ANZSCO alignment)	ACM40110 Certificate IV in Animal Control and Regulation	Demand for greater skills of local government officers in animal handling confirmed through submissions
361211	Shearer	Shearing contractor	AHC32910 Certificate III in Shearing	Regional shortages. Industry advice suggests demand will grow as national flock rebuilds from 100 year low. Confirmed through consultations
361311	Veterinary Nurse	Animal Nurse Veterinary Assistant	ACM40410 Certificate IV in Veterinary Nursing	Ongoing shortages at a national level. Confirmed through submissions and consultations
362211	Gardener (General)	Gardener	AHC30710 Certificate III in Horticulture AHC31010 Certificate III in Parks and Gardens	Ongoing widespread shortages at a national level. Confirmed through submissions and consultations
362212	Arborist	Tree Surgeon	AHC30810 Certificate III in Arboriculture	Widespread ongoing shortages at a national level. Confirmed through submissions and consultations
362213	Landscape Gardener	Landscaper	AHC30910 Certificate III in Landscape Construction	Widespread ongoing shortages at a national level. Confirmed through submissions and consultations
362311	Greenkeeper	Turf Keeper Turf Curator	AHC31310 Certificate III in Sports Turf Management	Shortages of new entrants cited. Confirmed through submissions
362411	Nursery Person	Production Nursery Supervisor	AHC31110 Certificate III in Production Nursery AHC31210 Certificate III in Retail Nursery	Existing shortage expected to increase in line with growth of urban development and surrounding parklands. Confirmed in research and through submissions
399999	Technicians and Trades Workers nec	Irrigation Technician (closest ANZSCO alignment)	AHC32410 Certificate III in Irrigation	Ongoing shortages of technicians cited by enterprises and industry bodies particularly in relation to irrigation design. Demand projected to increase due to natural resource management, lifting yields and sustainability pressures more broadly

ANZSCO Code	ANZSCO Occupation Title	Recognised Job Role	Qualifications	Justification/evidence
721111	Agricultural and Horticultural Mobile Plant Operators	Cotton Picking Machine Operator Harvester Operator Rotary Hoe Operator	AHC32610 Certificate III in Rural Machinery Operations	Growing shortages of regionally located mobile plant operators and drivers cited as competition for skilled labour emerges with the resource sectors. Expect considerable demand will emerge in regions where the industries are co-located. Confirmed in consultation, submissions and third party research
831312	Poultry Process Worker	Poultry Boner Poultry Slaughterer	AHC20210 Certificate II in Poultry Production Operations	Shortages of new entrants cited. Changing practices in animal handling and welfare will drive increased need for skill development of existing workers. Confirmed through submissions
841214	Vegetable Farm Worker	Farmhand	AHC20310 Certificate II in Production Horticulture	Ongoing shortages of new entrants and skill development needs of existing workers driving demand for skill development. Confirmed through submissions
841511	Beef Cattle Farm Worker	Farmhand (livestock)	AHC20110 Certificate II in Agriculture	Ongoing shortages of new entrants. Changing practices in animal handling and welfare will drive increased need for skill development of existing workers. Confirmed through submissions
841512	Dairy Cattle Farm Worker	Farmhand (dairy)	AHC20110 Certificate II in Agriculture	Changing practices in animal handling and welfare will drive increased need for skill development of existing workers. Confirmed through submissions
841513	Mixed Livestock Farm Worker	Farmhand (livestock)	AHC20110 Certificate II in Agriculture	Changing practices in animal handling and welfare will drive increased need for skill development of existing workers. Confirmed through submissions
841515	Sheep Farm Worker	Farmhand	AHC20110 Certificate II in Agriculture	Changing practices in animal handling and welfare will drive increased need for skill development of existing workers. Confirmed through submissions
841599	Livestock Farm Workers nec	Piggery Worker	AHC20110 Certificate II in Agriculture	Ongoing shortages of new entrants. Changing practices in animal handling and welfare will drive increased need for skill development of existing workers. Confirmed through submissions
841611	Mixed Crop and Livestock Worker	Farmhand	AHC20110 Certificate II in Agriculture	Ongoing shortages of new entrants and skill development needs of existing workers driving demand for skill development. Confirmed through submissions

## SEAFOOD

ANZSCO Code	ANZSCO Occupation Title	Recognised Job Role	Qualifications	Justification/evidence
12111	Aquaculture Farmer	Seafood Farmer Fish Farmer Hatchery Manager	SFI50104 Diploma of Seafood Industry (Aquaculture)	Regional shortages. Confirmed through consultations including advice from SA Primary Industries Skills Council, QLD DEEDI, Primary Skills Victoria
231211	Master Fisher (closest ANZSCO alignment)	Coxswain Skipper 3 Skipper 2 Skipper 1	Sourced from Maritime Training Package	Regional shortages cited with industry currently recruiting from overseas. Demand projected to increase due to revitalised international trade, existing global shortage and competition with local oil and gas projects for licensed crews. Confirmed through consultations and submissions, further reinforced by the policy targets for skill development of existing fishing crews in improved sustainability practices by 2013
399911	Diver	Aquaculture Diver	SFI30104 Certificate III in Seafood Industry (Aquaculture)	Regional and growing shortages compounded by demand by oil and gas sector, cited as constraint to industry growth. Confirmed through consultations and submissions
831313	Seafood Process Worker	Seafood Processor	SFI20504 Certificate II in Seafood Industry (Seafood Processing)	Ongoing regional shortages, confirmed through consultations and submissions
841111	Aquaculture Worker	Fish Farm Worker	SFI30104 Certificate III in Seafood Industry (Aquaculture)	Ongoing widespread regional shortages and cited as constraint to industry growth. Confirmed through consultations and submissions
899211	Deck Hand	Seafarer	SFI31204 Certificate III in Seafood Industry (Fishing Operations)	Industry currently recruiting from overseas. Reasons as cited above for 'Master Fisher 231211'. Confirmed through consultations and submissions
899212	Fishing Hand	Fishing Boat Mate Prawn Trawler Hand Purse Seining Hand	SFI31204 Certificate III in Seafood Industry (Fishing Operations)	Industry currently recruiting from overseas. Reasons as cited above for 'Master Fisher 231211'. Confirmed through consultations and submissions





[www.agrifoodskills.net.au](http://www.agrifoodskills.net.au)