AGRIFOOD
SKILLS AUSTRALIA

2009 Environmental Scan

of the AgriFood Industries

'assuming the mantle...

INDUSTRY SKILLS COUNCILS
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contents

the Environmental Scan, what it is, and what it isn't …

Its increasingly recognised by economists and policymakers alike that historical data and past trends no longer provide a helpful indicator in predicting future skill needs - the current financial downturn being just one contemporary example of the rapidity with which new factors hit and their devastating, unforeseen impact. Leading nations from the Organisation for Economic Co-operation and Development (OECD) are shifting their focus to 'early warning systems' that detect the onset of trends and at the same time, building the capacity of their Vocational Education and Training (VET) systems to respond with speedy, practical solutions once issues are identified. Environmental Scans have been conceived on this basis.

Based on real-time industry views and evidence from across Australia, the Scan aims to give readers a clear understanding of the factors currently shaping and impacting on AgriFood workforce development and how Training Packages and the VET system more broadly are currently responding.

The Scan's contemporary insights and its immediacy of advice are what set it apart from other reports in the VET system. For this reason, the Scan *is not* about re-creating already published statistics and economic analyses found elsewhere which, by their nature, are typically historical. Rather, it draws on a range of topical sources such as industry, enterprise and governmental research, recent publications and websites, international developments, press releases, current affairs programs and most importantly, from on-going visits and conversations with producers and workers throughout the country and across our sectors who continue to experience firsthand the issues needing to be written about.

The role of AgriFood Skills Australia has been formally broadened by the Australian Government to work with enterprises to identify and address their skill needs. It will see the annual Environmental Scan become increasingly rich with grass roots intelligence, a growing source of contemporary data to identify the magnitude of issues, and become *the* most valuable direction setting document available to the system.

Abstract

AgriFood and the sectors it comprises are set to **assume the economic mantle** as Australia's key exporter and source of job growth.

The effect of the financial downturn on the labour market has already started to mobilise much needed labour for sectors which until now have been constrained in their levels of production by chronic labour and skill shortages. Several sectors are well placed to absorb large numbers of displaced workers, raise productivity levels, and at the same time drive much of the Government's agenda on sustainability, innovation, biosecurity and conservation.

Mitigating against the effects of climate change and the implications of the *Carbon Pollution Reduction Scheme* are all contributing to a strong realization by industry that new skills and new knowledge are required at all levels of the workforce and by all sectors. During times of economic uncertainty and in an industry rapidly becoming dependant on science and technology, only by investing in its people will industry continue to grow its productivity levels.

National consultations and validation have brought into sharp relief the **three defining skills and workforce development issues** which must be addressed to realise the industry's potential, and further strengthen its economic and social contribution to Australia:

- **Attraction and retention** of skilled and semi-skilled workers
- Adoption of **higher skill levels** across the workforce
- **Adoption and diffusion of new research**, practice and technology across the industry

To successfully resolve these issues requires a genuine and active commitment on behalf of industry to adopt improved workforce development practices. But this must be matched by an assurance from the vocational education and training system to reform outdated policy architecture conceived under a previous economic era. The key areas of policy reform are:

- Creation of a fiscal and policy environment that enables delivery of **incremental building blocks of skills** in addition to full qualifications
- **Reform of the funding model** to enable targeted, flexible training in rural and remote Australia

- Re-conceiving of vocational education and training as a **whole-of-business, solutions driven approach to workforce development.**

AgriFood Skills Australia will take its strategic and operational direction from the issues and strategies outlined in the Environmental Scan. Product development will continue to extend beyond Training Packages and focus on tools to support skills and workforce development.

Work with key partners Skills Australia, the National Quality Council and the Department of Education, Employment, and Workplace Relations will continue to drive the fundamental change required. And throughout 2009 and beyond, AgriFood Skills Australia will further strengthen its grassroots engagement with industry and enterprises as its primary focus.

"Agribusiness in Australia is showing remarkable resilience in the face of the global uncertainty and economic gloom, helped by improved seasonal conditions in Western Australia and large parts of the east coast,"

Westpac's Agribusiness Chief Executive, **Graham Jennings** February 2009

Introduction and key messages from the Chairman

Sobering. Daunting. Exciting … just some of the words we've heard our industry use to describe the current environment - a period as astounding as it is unlikely, and which reinforces why we can no longer rely on historical trends and data to predict the future skill needs of our industry.

Heading into 2009, it feels very much as if we are on the verge of **a new and defining chapter in our industry**. Commitment to combating climate change, the global downturn and threat of protectionism, biosecurity, and food security for a world population nearing seven billion people and growing rapidly - these are all seen as sources of both unease and at the same time, unprecedented opportunity for the AgriFood industry.

But these are sobering times. At the start of 2008 the A$ looked invincible – by July it had all started to decline rapidly. Implications of the global financial downturn continue to unfold on a daily basis; our most recent consultations around the jurisdictions bearing witness to an evolving sense of what it means for our sectors.

Typically, **the atmosphere is one of cautious optimism**: a chance to access much needed labour by AgriFood sectors where chronic shortages have until now constrained production; a renewed commitment by employees to pursue a career path within the industry; and a focus by employers on skills development as a means of maximising their existing investment in the workforce.

As the downturn continues to hit various parts of the economy, our discussions have confirmed **AgriFood's capacity to absorb significant numbers of displaced workers** - and through strategies which although borne of the financial crisis, will have relevance long past the economy's recovery and go to the heart of industry's need for a system that delivers world class skills in a localised context.

In speaking with individual employers and workers from across the regions, towns and cities, I am struck by two things. Firstly, the humility and willingness of our people to share their most intimate hopes and fears for the future of their business and their day to day job. Secondly, that their individual stories are clearly part of **a larger wave of change being experienced right across the AgriFood industry**, in all sectors, and at all levels of the workforce.

We seek to do their stories and aspirations justice; to foster a clear understanding in those who read this document of the factors driving industry's workforce development needs and to paint a compelling picture on their behalf of why and how Australia's education and training system must undergo fundamental change for our industry to not just emerge from the economic crisis, but to be poised ready to maximise the opportunities set to unfold.

Within Australia, commentators are already looking to AgriFood to **assume the economic mantle as the nation's key exporter and source of job growth.** Its ability to absorb displaced workers is unparalleled. But only if we free up our training system to be truly responsive. On the international stage, the industry is set to play a strategic role in the central issues of the day – global food security, climate change and sustainability. But only if we better integrate our research outcomes with the delivery of skills.

More than any other sector, AgriFood is exposed to the effects of climate change. It's the root cause of many issues outlined in the Scan and which Australia is often first to experience among its industrialised counterparts and competitors due to our naturally harsh climate. We have the chance to be **environmental pioneers**; not just by establishing sustainable practices in Australia but by diffusing that knowledge to those developing economies which could become the biggest emitters on the globe. Critically, our challenge is to ensure that environmentally sustainable practice becomes synonymous with productivity growth. Never has our industry been of such strategic importance. **Never has the need for skills, new knowledge and workforce development been so urgent**.

In 2008, aggressive acceleration of food commodity prices sparked strikes, violent protests and riots in 34 countries. There are predictions by the United Nation's Food and Agriculture Organisation (FAO) that, should food prices and other factors remain on their current course, the ranks of the urgently hungry will soar to more than one billion in 2009. Asia and the Pacific region – home to over half the world's population and on the doorstep of our northern shores – contain nearly two thirds of the world's chronically hungry people. **We have a global responsibility** - not simply as producers of short-term food aid - but as pioneers of cutting-edge production processes for extreme climatic conditions.

The magnitude of these global issues sit alongside our domestic factors … the recovery of racing from the devastation of equine flu, chronic labour and skill shortages in most of our sectors, the worst drought on record from which many of our regions are still to recover, and the growing demands of both the 'conscientious consumer' and global food chains – the domination of which continues to reduce many producers to 'price takers' rather than 'price setters'.

But **our industry by its very nature is resilient**. Adversity is the partner of remarkable innovation; it forces us to quickly consider alternatives and become even more efficient with the resources and people we have. We are an industry which actively embraces new knowledge and new skills. Efficiency gains through new technologies and management practices, achieved on the back of research and innovation, have enabled Australian agriculture to stay a step ahead of our international competitors – returning an average **productivity growth of 3.8 per cent a year over the last 20 years** – and despite being the second least subsidised farming nation in the OECD.

We produce food for more than 60 million people, account for over 20 per cent of Australia's total commodity exports and provide 93 per cent of Australia's domestic food supply. More than ever we are the lifeblood of regional and rural Australia, **custodians of nearly two-thirds of its landmass** and natural resources, directly employing more than 880,000 people across the country.

Pulling together the Environmental Scan is a grounding yet inspirational time, listening to how adaptive, innovative and passionate people are about their jobs and this industry, hearing how its sectors are **world class and increasingly world first** in many of their operations. In our visits to fisheries, stables, processing plants, farms and other enterprises, we see an extraordinary pace of technology adoption. But technology can take us only so far. It must be matched by higher level skills within the workforce, and resolution of the enduring problems around **attraction and retention** of employees.

The Environmental Scan describes in simple, plain terms the moment we are in and the factors shaping our industry which will have a direct impact on the skills and capabilities of our workforce over the next 12 months. As a short, sharp document we don't claim to have captured everything that's happening across every sector, nor dare to suggest a future which sits beyond the insight of global economists. But we do believe we've captured those key issues that will impact on our industry, and which need a response from AgriFood Skills Australia and the VET system more broadly.

The message from industry is loud and unapologetic. **While the training system and the qualifications it delivers have served us well, we have been slow to re-conceive their purpose in line with the needs of a 21st century economy**. We tinker at the margins of policy and quote pockets of excellence as evidence of an effective system. Meanwhile, industry craves the flexible and responsive delivery of new skills and knowledge. Something is wrong.

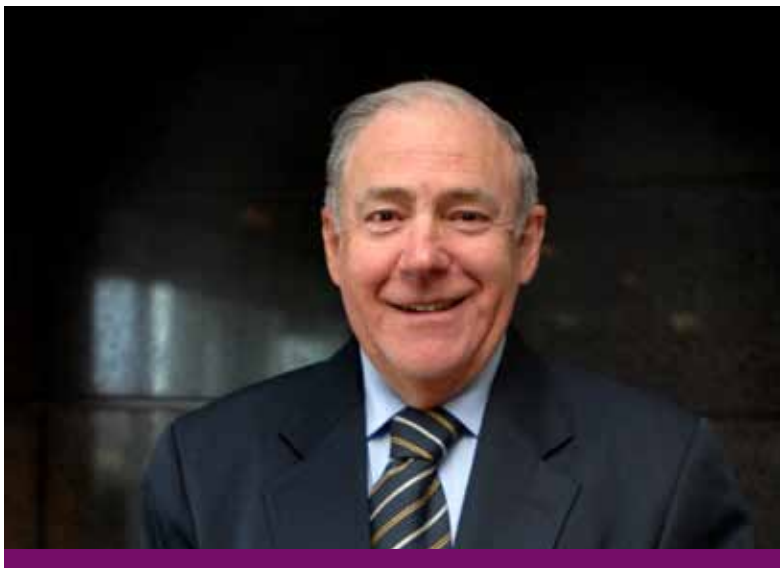
Training in isolation, even at its most effective, is not a sufficient response. A new paradigm that uses training to drive the diffusion of research findings and new practice into the workforce is needed; one that builds an enterprise culture and understanding of skills utilisation, career paths and meaningful job design; and embraces the various aspects of effective workforce development under one system and one coherent policy.

Only then will we be able to systematically deliver higher level skills right across our existing workforce and re-skill those workers displaced from other industries into areas of growth. With extreme pressure on industry to grow new jobs and increase existing productivity levels, issues long considered too hard to be on the national agenda need to be brought to the fore. In the short term, three in particular represent the policy levers for building world class skills in our industry and form the key messages for readers to take away from the Scan:

1. **Industry talks skills not just qualifications.** While some sectors and job roles require full qualifications, the training system's traditional commitment to full qualifications as the currency for learning is at odds with how many sections of our industry acquire skills and the way enterprises will re-skill new workers displaced from other industries. Entry level is often a discrete set of skills built upon over time using skill sets, on-the-job training and progressive recognition of skills acquired. A model which delivers genuine flexibility and choice, enables training providers to legitimately deliver **incremental building blocks of skills** in addition to full qualifications is paramount.
2. The current funding model for the delivery of public training is one of the single biggest barriers to skills development in regional and remote Australia. Industry requires a **flexible, client focussed funding model** which genuinely supports both the diagnosis of individual enterprise and learner skill needs and customised training solutions as a matter of priority.
3. Recognised training plays a key role in attracting and retaining new workers to the industry, injecting higher level skills into the existing workforce and by diffusing the latest practices across the industry. It must, however, be delivered as part of a whole-of-business solution. It must be capable of diagnosing an enterprise's skill needs in line with its business goals, integrating research findings and new technologies within a broader approach to skilling and extending to the challenges of labour supply. In short, we need **a multi-faceted, solutions-driven approach to workforce development.**

I commend this Environmental Scan to you as a real-time insight into the rapid changes occurring in every aspect of our industry and what AgriFood Skills Australia and the national training system must do to support its future and that of the economy. Its founded with the firm conviction that we are a progressive, proud, innovative and export-oriented industry with a strong future and the capacity to be a world leader - not just in the quality and sustainability of what we produce, but in the skills of our people.

John Baker Chairman
AgriFood Skills Australia
February 2009



Paspaley diver hand collecting shell. Image courtesy of Paspaley.

Case study

Higher level skills … right across the AgriFood workforce

Consistent quality and supply are the hallmarks of Paspaley Pearling Company - a reputation achieved through a commitment to 'the pursuit of excellence and the principles of quality.'

Using techniques originally developed by the Japanese and later adapted and refined for Australia's conditions, Paspaley has become the world's leading producer of South Sea pearls.

To produce pearls of Paspaley's quality, the process relies on the hand-collection of wild oysters from deep water by teams of 'drift' divers operating from ocean-going vessels. The gathered wild oysters are then meticulously cleaned, and returned to a 'nursery' on an open patch of ocean floor to await the seeding procedure later in the season, involving the careful implantation of a round ball of polished freshwater mussel shell - the nucleus of a cultured pearl.

One of the most physical, labour intensive and critical roles in growing pearls is the cleaning of the oyster shell during its growth to remove barnacles and other fouling bio-organisms, such as sea squirts and borers.

These organisms grow on the shells and compete with the oysters for nutrients - eliminating them or reducing their numbers improves the pearl oyster's chance of survival and its ability to grow a higher grade pearl.

Those responsible for cleaning must do so with great precision and care given its capacity to destroy the development process and consequently the quality of pearl if not done correctly. Consistent with its pursuit of excellence, Paspaley ensures each of its oyster shell cleaners is skilled to world class standards.

Across AgriFood, this scenario is replicated within many sectors where jobs once seen as basic are becoming more highly skilled and refined due to their critical responsibilities in assuring the quality and unit value of the product.

Section 1- latest intelligence

Macro factors

What we know ...

AgriFood industries are **responsible for nearly two thirds of Australia's landmass and natural resources**. Sustainability of these resources will be the enduring economic issue of our time; pressure will remain on our enterprises to have world class, and in many instances world-first skills in environmental stewardship. Restoring biodiversity to build our natural resilience to a changing climate, harnessing the services delivered free by well managed ecosystems, and using these factors to build sustainable production systems capable of delivering strong economic returns is one of the biggest challenges facing the industry.

Introduction of the ***Carbon Pollution Reduction Scheme*** (CPRS) has cemented the Australian Government's commitment to a lower carbon economy. Serious money is heading into carbon. The CarbonExpo 2008 advised attendees that globally, $64 billion went that way in 2007; by 2050 its expected that the industry will be turning over $10 trillion – more than today's oil industry. Agriculture is uniquely placed to take excess carbon from the atmosphere and turn it into something useful – be it grain, meat or soil fertility – but whether this translates into carbon being the next big farm commodity is a hotly contested debate, notably around the interface that links carbon conservation farming with carbon accounting systems. From 2010 the food processing sector will incur major cost imposts throughout its supply chain which, as a key exporter, will impact heavily on its global competitiveness. Agriculture is likely to become part of the CPRS 'cap and trade' scheme by 2015. Short term, it faces the challenge of absorbing price rises to energy and fuel dependant inputs to its products, while at the same time retaining its competitive standing in the export market.

Over recent years, many workers have left the AgriFood industry - some voluntarily due to more lucrative employment conditions and career paths in sectors such as minerals and energy resources; others due to the effects of the prolonged drought and equine flu. Agriculture has often cited shortages of between 50,000-100,000 workers; meat has relied on the 457 visa class to bring in skilled labour from overseas and production horticulture has sought Pacific Island seasonal workers to meet its harvest requirements.

Compounded by having the oldest average workforce, and the ongoing population drift to major cities and coastal areas, AgriFood has endured severe difficulties in **attracting and retaining workers**. While the economic slowdown will start to free up the labour market in the short term at least, AgriFood faces a long road ahead in rebuilding its workforce to acceptable numbers, to the skill levels now being demanded of its production systems, and crucially, putting in place solid attraction and retention strategies ready for when the economy rebounds and industry again faces competition for skilled labour. This presents challenges to both government and industry.

Growing consumer awareness of the environment and the impact of products is seeing the **'conscientious consumer'** become an increasingly powerful group in Australia influencing what is eaten, how its produced and delivered to the market. Over a quarter of Australians now make 'virtue purchases' as evidenced by the concept of 'food miles', 'buying seasonally' and growth of organic produce. Increasing awareness of diet and its impact on health is seeing the trend transcend into mainstream production values.

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. Adherence to the codes of practice is becoming a necessity for individual operators to satisfy discerning customers and markets.

Recent falls in oil prices are viewed transitory given production levels are already being reduced by the world's oil producing nations. Longer term demand for fuel by developing nations, finite levels of fossil fuels, and the issue of **energy security** will maintain the high cost of oil. For regionally based industries such as AgriFood, the effects are dramatic and significantly raise production costs due to the transport required to move product to freight terminals, processing plants and markets.

In the search for alternative fuel sources, the global appetite for **bio fuel** continues to reshape the nature of AgriFood in the United States, European Union and Brazil. Agricultural based ethanol has global consequences with priorities of the world's car driving economies on collision with third world economies requiring grain as a subsistence diet. While many question the capacity of ethanol to reduce emissions, the US policy on energy is set to continue to drive commodity prices across the globe and significant increases in the price of feed grain and cropping land.

Food prices are on the rise due to increased human consumption and the conversion of some crops for use as an alternative energy source (bio fuel). The competitive nature of retail supermarkets should enable some of its effects to be absorbed, however, prices are typically transferred to the end consumer. Last year saw food commodity prices soar triggering international protests and riots, and concern from the United Nations on how it would meet the soaring costs of emergency food aid for the world's poor and hungry. Australia has real capacity to provide global leadership in the area through diffusion of cutting edge knowledge of production processes for extreme climatic conditions.

AgriFood is becoming one of the most knowledge intensive industries in the economy, both in terms of its important role in improving productivity, and as an essential commodity in its own right. **'Knowledge drought'** is an issue facing AgriFood worldwide with public investment in research and development in serious decline. Much of Australia's productivity in AgriFood is attributed to better crop varieties, breeding and animal management practices, and improved herbicides and pesticides. Many of these advances are direct results of research and development which, faced with the challenges of growing global production from dwindling resources, will be needed more than ever.

Australia's disease-free status underpins its reputation as the producer of fresh, clean and naturally produced food. It confers major economic benefits by enabling industry to remain competitive in domestic and international markets against low cost, high volume overseas producers.

As overseas travel increases, and the volume of trade and the number of export and import destinations continue to expand, so does the risk of incursion of exotic pests and diseases. Over the past four years, total passenger numbers by air and sea increased by nearly 30 per cent, sea cargo containers by 26 per cent. Australia's 2008 independent review into **biosecurity and quarantine** arrangements – One biosecurity: A working partnership – asserts that zero biosecurity risk is both unattainable and unaffordable. Its central theme – and agreed to in principle by the Australian Government - is a seamless biosecurity system which fully involves the relevant players including business, other nations, and the community.

The **economic crisis** is set to impact in several ways - but not all negative. AgriFood sectors have been constrained over several years due to labour shortages, and the likely freeing up of the Australian labour market will enable many sectors to start rebuilding their workforce. As a heavily export orientated industry, weakening of the A$ also makes exports more attractive, although policy made in other countries will have significant bearing on the openness of those markets. G20 leaders met in November 2008, and pledged to refrain from protectionist measures for 12 months but within days several had succumbed to domestic pressures to protect their industry: Argentina and Brazil proposing a five percent lift in tariffs; Indonesia planning import restrictions on over 500 items. In both cases food and beverages were targeted. Post crisis, world food and fibre demand will be sustained by the declining availability of agricultural land and continued population growth most especially in developing countries.

… and what it means

Right across the AgriFood sectors, **job roles are evolving** with people needing to be **higher skilled** and **across a greater breadth of functions.**

This level of **change is occurring within the most basic of AgriFood jobs**, for example, pig farm hands are evolving into piggery technicians who typically manage feeding operations, monitor growth, insemination, animal health matters and scheduling resources. This change is also consistent with **technology improvements** in sectors such as viticulture where automatic pruning and harvesting machines are replacing the small army of seasonal workers who are increasingly hard to locate. The new technology needs smart viticulturists who can operate and maintain machines, as well as manage the logistics of grading and getting the product to market.

In addition to existing workers' needs, **new workers displaced from other parts of the economy** will need re-skilling. Some, such as manufacturing workers have the capacity to readily transfer into food processing sectors, similarly large plant operators from mine sites possess skills highly portable to the rural sector. But the speed and efficiency with which this will occur depends on the training system's ability to see past its commitment to full qualifications. The publicly funded training system must offer '**building blocks' of skills in addition to 'base qualifications**'. Delivery of training must be based on and tailored to the diagnosed needs of the enterprise and individual learner. Some would argue that this is already possible through 'skill sets' and even happening, but the reality is that it occurs in isolated pockets of excellence and due to the personal commitment of individual trainers finding 'ways to make the system work'. Pro-active training providers experience much frustration with the funding regime and the system's traditional fixation with full qualifications as the easily measurable currency for enrolment, funding and evaluation of a training provider's performance.

With AgriFood now becoming a highly knowledge focussed environment, reliant on technology and subject to supply chain and regulatory responsibilities, the need for **improved language, literacy and numeracy skills** within the existing workforce is paramount. Several sectors have a high proportion of workers with low levels of educational attainment or for whom English is a second language, both of which impact significantly on the pedagogy required to deliver skills and establishing the knowledge and skills already held by individual learners.

The financial downturn is viewed by many as a period of "shake out" and a period of significant change where only the financially fittest and the most creative or commercially focussed will prosper. **Business and financial management skills** are increasingly recognised as a pre-requisite for business owners and their staff given the multiple factors impacting on the industry, such as the knowledge and capabilities needed to adapt to changing climate and market volatility.

AgriFood's ever increasing knowledge and research orientation is generating a strong demand for higher level technical and science-based job roles, for example, researchers, scientists, engineers and animal technicians. **Genuine and nationally-recognised pathways between VET and higher education** are critical if the industry is to recruit and develop these workers. And arrangements need to work both ways: enable technicians who have grown up with the industry to gain higher level research and science based skills, and conversely, enable researchers and scientists to gain hands on experience in the industry through VET qualifications.

VET in schools remains a valuable way to expose younger generations to the opportunities, skills and job roles available within AgriFood. But as with the image of AgriFood more broadly, there is a need for careers advisors and parents to better understand industry's transition and rapid emergence as one of the key areas in the knowledge economy. Science, innovation and the strategic contribution made by industry to the world's environment, societal health and well being are all characteristics of new and emerging job roles.

Micro factors by broad sector

Agriculture, horticulture, conservation and animal care

What we know …

Over 137,000 individual farming businesses exist in Australia – 99 per cent are family owned and operated. The area of land used for agricultural production has declined from its peak of 500 million hectares in the 1950s to around 425 million hectares in the present day. And yet despite the contraction, industry has continued to return an average productivity growth of 3.8 per cent a year over the last 20 years as a direct result of smarter practice, new knowledge and applied technology.

Caring for our Country is the Australian Government's $2.5 billion investment in conserving, protecting and restoring the biodiversity of the continent. It recognises that beneath our often harsh landscape lies a unique and very real vulnerability. It focuses on six national priority areas: National Reserve System; biodiversity and natural icons; coastal environments and critical aquatic habitats; sustainable farm practices; natural resource management in northern and remote Australia; and community skills, knowledge and engagement. A large proportion of these initiatives rely on dissemination of skills and new knowledge to those who live and work in agricultural sectors, and involves big numbers, such as the targeting of 42,000 farmers to increase their uptake of sustainable farm and land management practices.

Increasing moves towards '**corporate cropping**' continue to see high-powered investors and corporations buying multiple farms in prime cropping country with the intent of achieving economies of scale and better utilisation of plant, human capital and infrastructure. While such large scale farms are relatively few in number they contribute significantly and increasingly to overall production. The top 10 per cent of large farms (by value) account for around 60 per cent of agricultural output (value). Importantly, this scale of farming is starting to realise **real career paths** for those wishing to enter the industry and attractive job roles for those willing to gain higher level skills and qualifications.

In 2007 over half of the agricultural land in Australia was drought declared, with many parts in drought for their sixth consecutive year. While termed the 'one in 100 year drought' due to its severity, drought remains an unavoidable reality; only timing and duration are uncertain. The International Water Management Institute states that by 2050 a world population of nine billion people will see over seven billion experiencing **chronic** to **critical water shortages;** cities will consume half the world's fresh water reducing by a third the amount of water available for food production. The challenge for farmers is therefore increasing food production knowing that water supplies will continue to lessen, and at the same time **'drought proofing'** their operations ready for 'the next one'.

Climate change, seasonal variability and the environment remain overriding issues for the sector. Sustainable use and management of natural resources (land, water and vegetation) are now fundamental skills required at all levels of the workforce. Alongside sit the skills and knowledge to understand and support **climate change mitigation and adaptation strategies**, much of which will draw on the industry's capacity to attract and interact with scientists and researchers.

Agriculture is responsible for 17 per cent of Australia's total carbon emissions. By the same token it now plants over 20 million trees a year. The concept of **carbon farming and sequestration** is now becoming an option for farmers wishing to diversify income streams.

The drought has witnessed many employees depart the industry, some of whom have been retrenched due to the failure of crops and downsizing of herds; others have left the industry out of choice and sought employment in higher paid industries. **Attraction and retention of the workforce** remains a critical issue for the industry and is directly tied to its ability to recover to pre-drought conditions.

Peri urban properties are those based on the perimeter of urban areas and hence the term 'peri'. Landcare Australia defines these properties as those that range from between 5 to 100 acres, are neither fully urban nor rural, and produce a significant proportion of Australia's total gross value of agricultural production. Peri-urban agriculture can be highly productive and ranges from hi-tech, controlled-environment agriculture through to community gardens and nurseries, specialist organic farms and hobby farms. For many its a choice driven by lifestyle, and a rapidly growing group, but some of these farmers are new to the industry and their understanding of pest and weed management, plant and animal disease pose real biological risks to commercial farms.

Indigenous Australians own and/or manage over 19 per cent of the Australian continent and are key stakeholders in *Caring for our Country* due to their significant knowledge, skills and land and sea management responsibilities in the protection of Australia's natural and cultural resources. Many existing **Indigenous Land and Sea Management Groups** have the potential and desire to move beyond community development models into for-profit or social enterprise organisations capable of generating both income and employment for Indigenous people in cultural and natural resource management.

Genetically modified (GM) crops are commercially grown by more than 10 million farmers in more than 20 countries, including some of Australia's competitors. Inconsistent state and territory bans on GM crop production have prevented widespread introduction of GM crops. Considerable debate continues but its likely that the resulting products will become more widely accepted in Australia as they have in a number of other countries; most especially where there are increased nutritional and health benefits and where crops require less pesticides, need to be more water efficient, drought tolerant and resistant to climate variability.

Australian horticultural products have good health credentials, but an export intensity of less than 10 per cent of production. A typically labour intensive sector, it is unable to compete solely on cost and looks to produce **distinctive premium products with original or high quality characteristics** difficult for Australia's competitors to match. Productivity growth, while improved through labour saving devices, disease control, precision horticulture and reduced water use, is largely determined by the sector's ability to secure skilled and seasonal labour.

Amenity horticulture has been one of Australia's fastest growing industries due to its close ties with urban development. It includes plant nurseries, landscaping and maintenance of golf courses and parks, and accounts for around 30 per cent of all agriculture workers. Climatic change, new extremes in seasonal variability, and management of scarce water resources are witnessing the job roles within these sectors relying more and more on higher level technical skills and knowledge.

Animal care and management is estimated to be worth in excess of $4 billion annually and growing. Including animal welfare officers and inspectors employed by organisations such as the RSPCA, local councils and port authorities, it extends to vet nurses, breeders and groomers. Its an area growing in importance as the impact of animal health, welfare and behaviour is better understood by AgriFood sectors, especially in the areas of agriculture and racing.

… and what it means

Rural industries are becoming **increasingly sophisticated requiring a highly skilled and educated workforce**. In addition to traditional farming skills, workers must now have broader knowledge and higher level skills across a wide range of associated factors that impact on their direct job role. Skills in water management, information technology, natural resource management, risk management and in the use of increasingly sophisticated equipment, are all paramount to enhancing productivity and sustainability.

With increasing requirements for business planning, enhanced market awareness, use of modern technology - such as computers and global positioning systems - and better agronomic management, modern farm managers will need to become increasingly skilled. **Higher levels of formal education will increasingly be a feature of enterprise manager credentials**, particularly for new entrants. Superior management skills and practices are a common feature of the better performing rural businesses in Australia. To a significant degree, better performing farmers appear to make greater use of modern communication tools and are more adept than the average at investigating market opportunities, at researching customer requirements, at business planning and financial management, and at adopting the latest farming techniques.

Consumer pressure on food manufacturers to assure their on-going quality of product is unrelenting. As supply chains become more established, so follows the requirement that formal quality assurance processes be adopted by primary producers, an expectation that is creating an increasing demand for skills in **quality assurance, Hazard Analysis Critical Control Point, handling and risk management**.

At the same time, many tasks previously undertaken by employees, such as fencing, harvesting, lamb marking, cotton chipping, tree planting and bookkeeping are now being undertaken by contractors, freeing up workers to apply **greater technical and specialist skills and knowledge**.

Food, beverage and pharmaceutical processing

What we know …

Australia produces food for over 60 million people. Strategically, it provides the country with a high level of **food security** by virtue of its capacity to provide the vast majority of on-going nutritional needs of the population. Economically, improving technologies enable much of the industry's produce to be exported and landed into distant markets at a high quality – the sectors regularly accounting for over 15 per cent of Australia's exports. Boosted by the increasing **westernisation of diets** in developing countries and its status as a disease free producer, it's Australia's largest manufacturing industry.

The multinational food manufacturers, food service companies and supermarket chains that dominate global food markets have immediate and powerful capacity to source their input requirements from anywhere in the world, making competition between suppliers fierce and decisive, and delisting a continual threat. Individual producers have little power to influence the prices they are paid and are becoming **'price takers' rather than 'price setters'.**

The pressure on manufacturers is increased by the growing pursuit of **'own brand' ranges** by the major grocery retail chains. Private label brands continue to evolve in their sophistication, quality and availability, and are set to assume a greater proportion of customer spend as household budgets tighten. For manufacturers, it tends to force the commoditisation of all but the most innovative, niche or strongly branded products in high volume categories, with a resulting squeeze on profitability.

Emergence of the **'conscientious consumer'** or 'virtue purchaser ' is seeing buyers wanting to know more about the product, not just in terms of nutrition but all round production values, such as 'food miles' or the distance food has travelled to reach the consumer as a proxy for its environmental impact. While an incomplete measure, the concept of eating locally and seasonally is becoming more important to a growing number of Australian consumers, and reinforced by 'tactical shopping' in households affected by the financial downturn. Ethical sourcing, eco labelling and corporate social responsibility more broadly will continue to be a key determinant of staying ahead of competitors although in the short term will need to be accompanied by value for money in a tightening market.

Preventive health is a major challenge for Australia and for the food industry. With estimates from Diabetes Australia that obesity costs Australia over $25 billion each year, industry is under increasing pressure to not only produce nutritious choices and reduced portion sizes but importantly, to somehow balance these with demands for convenience and indulgence.

After 15 years of almost unrestrained export growth built on quality, value and innovative marketing, **Australia's wine industry has experienced a setback**. Australia shipped 11 per cent less wine by volume and by 18 per cent less value in 2008 or almost one-fifth. Volatility of the Australian dollar has underscored the wine industry's need for a refreshed strategy other than competing with low-wage rivals of Chile, Argentina and South Africa. Some believe there is urgent need for rationalisation and downsizing required within the industry, others perceive that *"Rather than compete on good wine, great price, we need to focus on regionality, on great wine at maybe a good price".*

And what it means ...

Food and pharmaceutical sectors are amongst the **most highly regulated sectors in the economy** due to their fundamental role in people's health and wellbeing. Regulation often sits at the three tiers of government (local, state and national) creating inconsistency, duplication and inefficiency as the flow on effect. While regulatory reform is underway, this too has implications and is witnessing a growing increase in the need for risk management and quality assurance skills throughout the workforce.

As an industry **highly dependent on its supply chain** and the availability of basic commodities, the drought provided clear evidence of its vulnerability to crop failure and rising input costs. To compete within the market and maintain contracts, food producers must be able to assure on-going quality of their produce, the timely supply and traceability

of goods, and meet consumers' evolving tastes. Again, high level skills in food technology, risk management, quality handling and supply chain management are being increasingly sought. Domination of the global food chains also reinforces the need for producers and suppliers to have solid business acumen, negotiating skills and marketing strategies capable of responding to changing demands.

Rising input costs and the perishable nature of much of the sector's product necessitates the adoption of **lean manufacturing** practices which, by definition, focus on the 'pull system' where goods are produced directly against customer orders. The philosophy aims to reduce or eliminate inventories, reduce waste and in doing so, release business capital, but to do so requires a fundamental change of attitude, skills and practices in the workplace.

Timelines to test and prove new concepts are increasingly short; lead-times for '**refreshing products**' are reducing. These factors have necessitated the sector becoming a significant investor in research and use of technology. While many of the technologies used are not necessarily new, their use is more widespread, and being made simpler to use, requiring a corresponding growth in the number of workers involved in the use of technology.

There are big career opportunities available in the food sector, both domestically and internationally. Despite this fact, the **food processing sector finds it hard to attract workers**, most especially technical and managerial aspirants. Food safety and food technology are significant roles in their own right due to the stringent requirements of export markets, increasing regulation faced by producers and awareness of consumers.

In response to these pressures, industry sectors such as sugar milling and dairy are adopting **innovative approaches to growing local labour pools**. In collaboration with government, the sugar industry will train extra people to address a growing need for high level skilled operators. Similarly, the dairy industry is developing 'skills ecosystem' approaches where enterprises work collaboratively to ensure the availability of required skills which, like the sugar initiative, will benefit the sector and also co-located industries, such as mining.

Meat processing

What we know …

As **one of the world's largest and most successful producers of commercial livestock**, Australia relies heavily on the quality and efficiency of its meat processing industry to optimise and grow its position as a major player in world export markets. The industry is entering a period of challenge and, at the same time, opportunity. Slowdown in the international economy will have a significant effect on most export orientated industries, however, the fall in the value of the Australian Dollar represents an opportunity for the meat export industry, providing it remains at around $US 0.65

Despite being a competitive and demand driven market place, the meat processing industry services significant international and domestic markets and **enjoys the reputation of being a 'clean and safe' producer**. According to Meat and Livestock Australia, the industry must continue to increase productivity and efficiencies to maintain its advantage and is striving to:

- increase the efficient use of critical resource inputs such as water and energy
- facilitate adoption of new technologies and systems to increase efficiency
- maximise the recovery of saleable meat and edible offals
- improve working conditions to reduce work-related injuries and illnesses

Meat processing remains **one of most regulated processing industries in the world** with evidence of accredited training an important component of access to offshore markets. Meat workers are required to demonstrate that they have the skills to meet specific country or customer requirements including:

- Food safety
- Multiple quality assurance standards
- Aus-meat standards
- Animal welfare standards
- Traceability standards
- Environmental standards
- Religious slaughter

While Australia's red meat industry continues to adopt world-class technologies and systems, it also experiences ongoing **difficulties in attracting and retaining skilled**

workers, and therefore an unusually high turnover in its workforce. Over recent years, the extended period of near full employment has exacerbated the situation. The sector's strong investment in training has been necessary to meet regulatory and productivity requirements and provide solid opportunities for those wishing to pursue a career in the industry. But as the industry acknowledges, this must be complemented by an overarching skills and workforce development strategy that addresses attraction and retention as a fundamental priority.

While the industry has been pursuing a number of relevant initiatives to address this complex matter, advantage should be taken of changes in the current employment market to review and adopt refined strategies and practices to resolve these issues. Like other AgriFood industry sectors, the **meat processing industry is capable of absorbing displaced workers** from other industries scaling back production and sales. It will enable the meat industry to recruit local workers and - supported by relevant training and career pathways, and contemporary employment practices - will improve its retention rate.

… and what it means

In recent years the meat industry has relied on imported skilled labour under the 457 visa system to address critical skills shortages throughout the industry, and this has enabled meat processors to continue to operate. Meat processing **companies will have to increase training for Australians** currently employed in an effort to fill the skilled positions needing to be vacated by the 457 visa holders where meat companies are not signatories to a Labour Agreement and are unable to sponsor extensions for visa holders.

It is therefore important to expand opportunities for existing workers training at Certificate III and IV levels. The *Productivity Places Programe* is viewed as an ideal vehicle to support this training but despite strong and documented demand, only limited places have been made available to date. **Long term critical shortages** exist in the industry, with severe skills shortages in slaughtering, boning, slicing and butchery.

Critical to its future will be an **industry wide approach to enhancing career pathways and opportunities, and overall skills and workforce strategies** so that when the economy does rebound, the industry is well positioned to retain existing workers and attract and develop new entrants.

Racing

What we know …

Australia has more racecourses than any other country, the **largest per capita racehorse population in the world** and shares the best stallions in the world due to its favourable and counter seasonal climate for breeding; all of these factors making it financially attractive to professional owners and breeders. The industry generates over $10 billion annually and creates around 92,000 full-time equivalent jobs. Almost half of the gross economic impact from the racing industry is generated in non-metropolitan regions.

June 2008 witnessed Australia officially declared free of **Equine Influenza** by Australia's Chief Veterinary Officer. While its eradication is a significant achievement, the freeze on horse movements during 2007 continues to reverberate throughout the industry at all levels. Interrupted breeding cycles are likely to change the dynamics of the industry for the next two years as evidenced by the recent yearling sales where approximately 15 per cent less young horses were available for purchase.

Labour shortages were already acute in a number of occupations prior to the outbreak; lay-offs during the horse movement standstill and closure of race tracks have only made it harder to attract workers, with a sustained and chronic shortage of track riders. Community perceptions of career opportunities in the industry are mixed due to the prevailing work conditions, the relatively high number of occupational accidents and its association with gambling. Career paths and employment conditions are limited due to the part-time or casual nature of many jobs although some of the larger employers are looking towards innovative job design as a solution. For example, a multi-skilled arrangement where track riding is combined with another discipline key to the industry (horticulture) has been successfully piloted.

An **increasing level of licensing and regulation** is being required for various occupations and viewed by many as an integral strategy in improving the image and credibility of the industry. Jockeys, horse and greyhound trainers, track riders and drivers are all licensed.

Within racing, **a clear differentiation exists between its three codes** of thoroughbred, harness and greyhounds. Thoroughbreds are 'big' industry, while the

majority of people involved in harness and greyhound racing are 'family run' businesses or hobbyists. Different operating standards and practices apply across the codes and add to the diversity of skills required and workforce development challenges faced by the industry.

Another important consideration for the racing industry is the nature of its ability to mechanise. Many industries have tackled a lack of skilled labour through **mechanisation** but there are limited opportunities to do so in racing given its 'hands on' nature. Its reliance on people and their need for skills is being increasingly heightened by the numbers now joining the industry without any previous experience or understanding of handling and caring for animals.

… and what it means

Recruitment of jockeys and track riders remains the number one growth determinant of the industry. Most come to the industry with basic equine handling skills having been exposed to horses in a regional environment. With high levels of migration from rural to urban areas by young people, less potential candidates are coming forward with the required skills and of these, a declining number are willing to settle for a regional lifestyle , the long hours or male dominated culture.

Much work needs to be done in the area of job design and innovative career pathing to both attract and retain skills and labour within the industry for sustained periods.

Seafood

What we know …

Australia's commercial fishing and processing industry generates a combined annual worth of over $4 billion and comprises the wild catch, aquaculture and post harvest sectors. A **period of unprecedented change** is being experienced by the industry due to the internationalisation of fish markets, and balancing consumer demand with measures to rebuild stocks and minimise the impact of fishing on the marine environment.

Highly regarded internationally, the industry is characterised by **high quality, high value but low volume catch**. Australia has the third largest fishing zone in the world covering 14 million square kilometres: twice the area of Australia's landmass. By comparison it ranks 50th in terms of the tonnes of fish produced – the comparatively lower production level largely due to surrounding ocean waters being typically low in nutrients or plankton. Coupled with the rising cost of fuel to operate boats – which can equate to 40 percent of total running costs - access rights being increasingly limited, and an increase in Marine Protected Areas, the **industry must increasingly focus on world class fishing practices** to efficiently and consistently deliver high quality, affordable seafood.

Ecologically sustainable development (ESD) is now accepted as the foundation for natural resource management in Australia, and is a major component of all fisheries legislation at both Commonwealth and State levels. ESD aims to meet the needs of the current generation while conserving ecosystems for the benefit of future generations. Bycatch – the unwanted catch of fishing operations – and the overall impact of equipment used and practices employed by its workforce is the subject of much focus and growing awareness by the industry in its active commitment to sustainability.

Maintaining biodiversity and biosecurity of fishing habitats is fundamental to ESD and the industry's future. Exotic pathogens and pests can arrive in imports, ballast water discharged from visiting vessels and as hull fouling organisms; domestically there are growing concerns over the impact of inappropriate land clearing, fertilizer run-off and irrigation on freshwater and marine fisheries. Climate change, and specifically warmer sea surface temperatures, has real potential to change the

distribution and abundance of species - changes in ocean chemistry and increased CO^2 levels will increase ocean acidity and impact heavily on species dependent on calcium carbonate for skeletons and shells.

Higher income is being derived from **increasing the unit value of individual species through product transformation** and managing the ongoing quality of produce rather than increased tonnage. Advances in post harvest processes have resulted in high quality live, fresh and frozen produce being exported throughout the world to the value of almost $1.5 billion.

Land and marine based **aquaculture is the fastest growing primary industry in Australia**, and the fastest growing food production sector in the world. Projected world population growth suggests an additional 37 million tonnes of fish protein will be required by 2030, a demand which will need to be largely met by the aquaculture sector. Australia currently produces 50,000 tonnes.

… and what it means

The wild catch and aquaculture sectors have continued to mature in their approach to skilling over the last five years, most especially within the larger organisations. In the wild catch sector, the bulk of formalised training has for many years revolved around regulatory compliance or licensing for specific job roles, such as coxswains or skippers. By necessity this is changing. Ecologically sustainable practices, a focus on unit value and the criticality of storage and processing within the first 24 hours will drive an increasing demand for higher level skills. Marine aquaculture is set to become a highly sophisticated industry in its own right. The days where deck hands simply threw feed at tuna in sea cages are diminishing; the job role becoming **more technician focused** by encompassing fish husbandry, feed and nutrition management, environmental management, quality handling issues, cold chain management, residue management as well as standard vessel operating functions.

Employment numbers in the fishing industry are unclear partly due to the seasonal nature of much of the work, and that some job roles are aggregated under food processing or transport. A conservative estimate by the Fisheries Research and Development Corporation is 20,000-30,000 persons in harvesting - the post harvest sector taking this figure higher. Image of a physical, sometimes dangerous work environment, compounded by the seasonality of some aspects have made **attraction and retention a major issue** – in some regions, the aquaculture sector's capacity to reach its potential will be directly tied to the availability of suitable labour.

In wildcatch, wages are often based on a percentage of the catch. Combined with factors such as remoteness and seasonality, the industry and its employment conditions **are not an easy fit with the conventional approach to training** or traineeships and apprenticeships.

In all cases, the industry talks skills not qualifications. It seeks a truly flexible system where skills are acquired incrementally to a Certificate II or III level with subsequent progression wrapped around what people actually do rather than ideological job roles. Delivery of skills, irrespective of enterprise scale, must be in bite sized chunks delivered at a time, pace and place conducive to the enterprise.

Market environment

The founding principles of Australia's training system - industry led and nationally driven – continue to hold firm and in many ways have found greater resonance in the current economic climate. But as the Environmental Scan demonstrates, the era in which the system was conceived is radically different to that in which it now operates. The message from industry is clear - there needs to be both a fundamental re-conceiving of the purpose, scope and policy of the national training system if it is to respond to a 21st Century knowledge economy.

While AgriFood comprises over 23 sectors and sub sectors, it's clear that most have long moved on from the notion of training being an activity undertaken in isolation from the broader context of building industry's capability. There is a growing view that the training system as we know it should be broadened into a skills and workforce development system, and that it should deal with the three areas which underpin an industry's capacity to operate in the global economy:

- Attraction and retention
- Development of higher skills
- Diffusion and adoption of research and development findings

These three areas form AgriFood Skills Australia's key areas of strategic focus over the next 12 months (Figure 1 over leaf). Several enablers will give effect to and sit beneath these strategies and will form the basis of AgriFood Skills Australia's activities over the same period.

From a policy perspective, there remain three crystal clear areas of leverage where significant change within the training system is required:

1. Creation of a fiscal and policy environment that enables delivery of **incremental building blocks of skills** in addition to full qualifications

   74 per cent of respondents to the AgriFood Skills Australia survey 'Agreed' or 'Strongly Agreed' that this is a key feature required by their industry

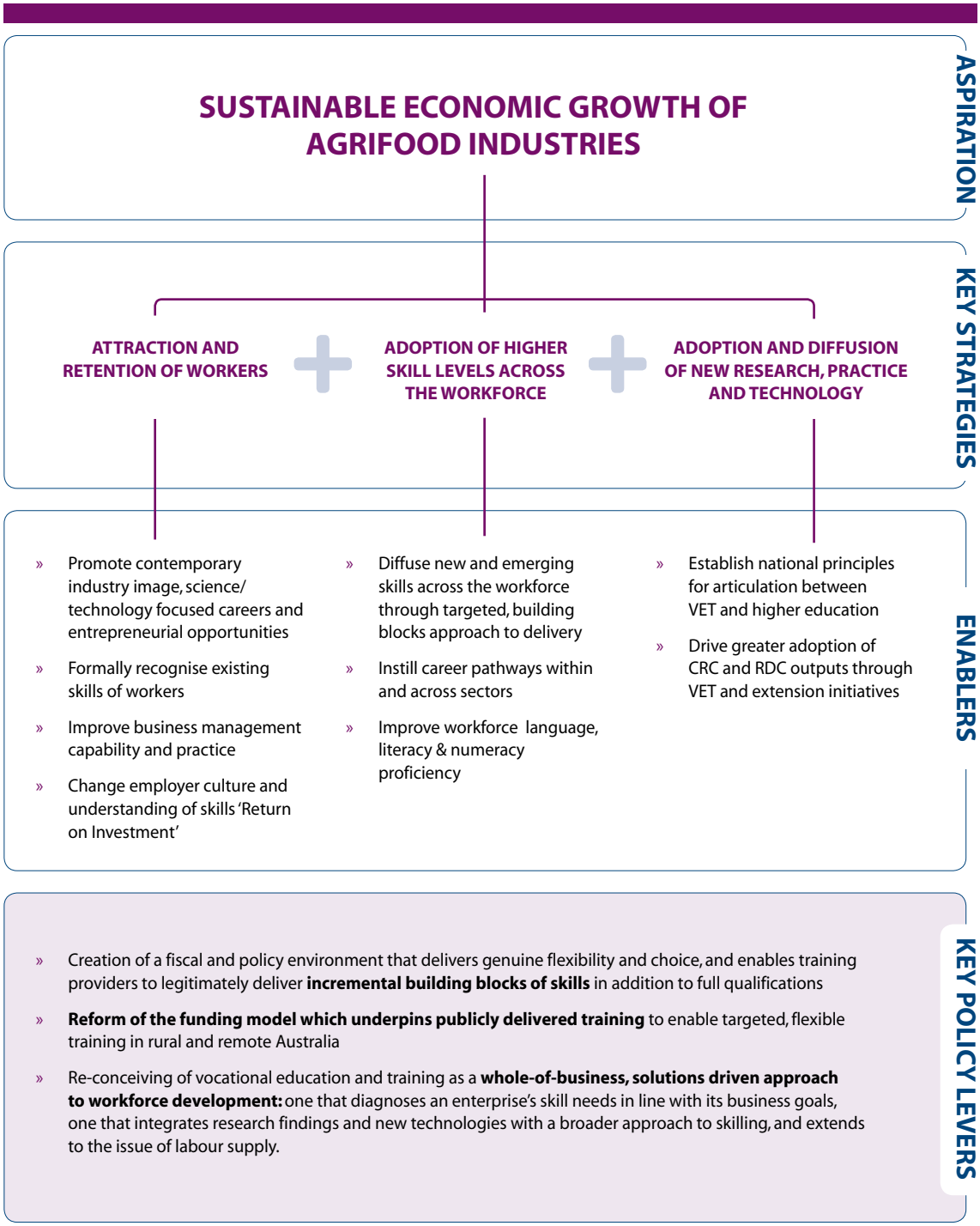
2. **Reform of the funding model** to enable targeted, flexible training in regional and remote Australia

   76 per cent of respondents to the AgriFood Skills Australia survey 'Agreed' or 'Strongly Agreed' that this is a key feature required by their industry

3. Re-conceiving of vocational education and training as a **whole-of-business, solutions driven approach to workforce development.**

   78 per cent of respondents to the AgriFood Skills Australia survey 'Agreed' or 'Strongly Agreed' that this is a key feature required by their industry

FIGURE 1. AgriFood workforce development needs



In addition to the three policy areas outlined above (Figure 1), additional elements of the existing training system/ innovation system require change.

Research and development

AgriFood enjoys over 30 related **Research & Development Corporations** (RDCs) and **Cooperative Research Centres** (CRCs). Effective dissemination of new knowledge at a grass roots level remains a significant issue, as does equipping managers and employees with the skills to extract ideas from research in a manner that delivers strong economic returns. Commissioned research by AgriFood Skills Australia found that most RDCs and CRCs do not consider the education and training system an important step on the knowledge adoption pathway. While some have started to recognise the value of VET, typically, training providers are not considered key players in building industry capacity or knowledge adoption in rural industries. Suggesting a lack of understanding as to how standards are used and the place of individual technologies within them, a number of CRCs argue that standards and qualifications are either not in place for the occupations they target or that the outputs of their research programs are so new that no relevant competency standards are yet in place.

Contemporary wisdom is that for Australia to legitimately reposition itself as a knowledge economy, innovation and new knowledge must occur at all levels of the workforce. It would therefore seem odd that the vocational education and training system - responsible for skilling 85 per cent of job roles in the economy - is seen as unimportant in dissemination and adoption. AgriFood Skills Australia is continuing to build relationships with individual RDCs and CRCs, however, there is a clear need for the overarching policy and planning guidelines for these organisations to be extended in the area of research dissemination and adoption, and specifically in their relationship with the national training system.

38 per cent of respondents to the AgriFood Skills Australia survey stated that innovation would drive 'total change' or 'significant change' across their business operations over the next 18 months

A 'national' system or a National Training System

Typically, companies operating across multiple jurisdictions continue to work with up to eight different interpretations and processes of a 'national system.' Training Packages, the Australian Quality Training Framework (AQTF) and the Commonwealth/State funding agreements largely carry the burden of maintaining the integrity of the system; the operational and administrative policies which sit beneath, and give effect to the 'national system', continuing to differ considerably from one jurisdiction to the next. Most recently this has been evidenced by the *Productivity Places Program* where trials to deliver training to existing workers within national companies have been managed by Industry Skills Councils.

A national commitment by all jurisdictions to the **National Training System**, the principles of national consistency and the enforcement of the AQTF standards is required. Reforms through COAG on streamlining regulation and reducing the burden of red tape on businesses should urgently be extended into the area of training.

Contemporary policy

In addition to changes which need to be made to the policy architecture of the system, its critical that in the current climate, existing key government programs and their criteria be reviewed and if required, be revised or suspended. For example, the *National Skills Needs List* determines the eligibility of employers and Australian Apprentices for a range of Australian Government incentives; the *Skill Shortage Lists* inform eligibility of learners for the *Productivity Places Program*. At this point, the training system should not constrain employers' willingness to invest in their workforce by virtue of data and criteria derived under a previous economic environment.

VET workforce

While much of an individual's skills formation occurs in the workplace, the critical role played by on-the-job assessors, supervisors and trainers, is rarely discussed and even less factored into policy development or resourcing. With COAG starting to explore the issue of skills utilisation, and how to best maximise Australia's human capital, it is these people who will ultimately be responsible at a grass roots level for identifying and putting to good use the skills housed in the enterprise. Innovative policy, recognition and resourcing of this critical group is required.

72 per cent of respondents to the AgriFood Skills Australia survey stated that they 'always' or 'often' trained their workforce on the job using supervisors or other workers.

Section 2 – Identified workforce development needs

The following snapshots distil information in section one of the scan and advice gathered throughout its development into short sharp summaries of workforce development needs by each major sector.

Seafood overview

Comprises wild catch fishing, aquaculture and post harvest processing sectors. About 9,000 commercial fishing boats operate in Australia. Directly employs about 21,000 people in the catch and harvesting sector and 4,000 in processing. A further 6,000 people are employed in the aquaculture sector and contribute significantly to regional employment.

Major challenges and trends

- Attracting, training and retaining workers at all skill levels
- Growing contemporary industry leaders and securing their engagement in fisheries management, community liaison and workforce development
- Evolving job roles which require higher, often technician orientated skills
- Ensuring that occupational health and safety and food safety are principal components of an integrated approach to risk management
- Diffusing new practice and knowledge from research and development work

New and emerging skills

- Seafood processing, food development, supply chain skills underpinned by new technologies and world class research and development
- Natural resource management
- Compliance and regulatory requirements
- Biosecurity, emergency pest and disease response
- Animal behaviour, health and welfare, biotechnology
- Marketing and market research

Reported labour shortages

- Aquaculture Farmers
- Seafood Process Workers
- Deck and Fishing Hands
- Master Fisher
- Divers

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

Food, beverage and pharmaceuticals overview

Comprises food processing, pharmaceuticals and beverages and is Australia's largest manufacturing industry with total sales of around $70 billion. It consistently accounts for more than 17 per cent of manufacturing industry employment and involves over 7,750 enterprises and over 190,000 employees, 40 per cent of which are located in non-metropolitan areas. Over 1,900 wineries and 7,950 vineyards add to this picture, with the pharmaceutical sector employing approximately 15,000 workers and turning over $8.8 billion a year.

Major challenges and trends

- Attracting, training and retaining workers at all skill levels
- Evolving job roles which require higher skills and/or greater breadth of skills
- Greater adoption and understanding of technology across the workforce

New and emerging skills

- Processing and supply chain skills underpinned by new technologies and world class research and development
- Lean and agile manufacturing processes

Reported labour shortages

- Food and Drink Factory Workers
- Food Safety Specialists and Auditors
- Food Scientist and Technologists
- Laboratory Technicians
- Mechanical Engineering Tradespersons
- Poultry Process Workers

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 abattoirs, meat processing, meat retailing, smallgoods manufacturing and food services. Comprising approximately 5,800 enterprises and approximately 60,000 workers, the industry generates GDP in excess of $16 billion per annum. About 10,000 workers undertake Australian Apprenticeships each year at Certificate II and III. A further 1,000 undertake higher level training supported by industry.

Major challenges and trends

- Attracting, training and retaining workers at all skill levels
- Reducing employee turnover rate
- Actively embedding career paths and rewarding job design
- Growing contemporary industry leaders to drive integrated approaches to workforce development

New and emerging skills

- Skills and knowledge to address national and international standards in meat safety, animal welfare and specific customer requirements
- Processing and supply chain skills underpinned by new technologies and world class research and development
- Business management skills in the meat retailing sector

Reported labour shortages

- Butchers
- Slaughterers, Boners and Slicers
- Meat Processing Labourers

Delivery requirements

- Access to accredited qualifications at Certificate II for entry level workers
- Access to accredited qualifications for existing workers at Certificate III and IV.
- Skills Sets to support skills development in response to specific licensing and regulatory requirements

Racing overview

Comprises three codes: thoroughbred; harness and greyhound – the 'code' being the breed and type of animal which competes. Some workers are centrally employed in permanent conditions, however the majority in the industry are self employed, part time or transient (trainers, jockeys, track riders, driver and stable staff). The industry is made up of over 600 racecourses and more than 22,000 small/ medium sized enterprises make up the industry, 95% of which are in non metropolitan Australia.

Major challenges and trends

- Attracting, training and retaining workers at all skill levels
- Higher demand for and skilling of casual staff
- Growing contemporary industry leaders to drive culture change on workforce development
- Establishing innovative and productive job roles, supported by meaningful career paths
- Embedding occupational health and safety as part of an integrated approach to risk management and biosecurity
- Linking skill development with industry licensing and compliance requirements
- Embedding integrity operations and management training as part of an integrated approach to improving the image and credibility of the industry

New and emerging skills

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

Reported labour shortages

- Track Riders
- Stablehands
- Horse Carers and Handlers
- Farriers in regional areas
- Localised shortages in Jockeys, Stewards and Qualified Trainers
- Equine Dentists, and other animal 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

Agriculture, horticulture, conservation and animal care overview

The rural industry covers: rural production (commonly referred to as 'agriculture'); amenity horticulture; conservation and land management; animal care and management. As of February 2008, over 290,000 people were directly employed in the Australian farm sector – 90,000 down on pre-drought levels – accounting for around 3 per cent of the national workforce.

Amenity horticulture has been among Australia's fastest growing industries, closely linked to urban development and lifestyle. Employing some 125,000 people, it turns over $6 billion annually.

Major challenges and trends

- Attracting, training and retaining workers at all skill levels
- Evolving job roles which require higher, often technician orientated skills
- Building environmentally sustainable production systems capable of delivering strong economic returns

New and emerging skills

- Processing and supply chain skills underpinned by new technologies and world class research and development
- Natural resource management – biodiversity, sustainable management of land, water and vegetation
- Biosecurity, emergency pest and disease response, biotechnology

Reported labour shortages

- Animal Technicians
- Dairy Operators
- Farm Hands
- Farm Managers
- Fruit Pickers
- Indigenous Land and Sea Managers
- Production Horticulturalists
- Shearers
- Station Hands
- Turf Mechanics

Delivery requirements

- Building blocks as opposed to full qualification approach to skills development
- Integrated and innovative delivery of skills combined with the diffusion and adoption of research findings to raise enterprise productivity levels

Geoff Odgers, Chairman of Murray Dairy Inc and Victorian dairy farmer

Case study

New skills, research and business management combined … the future paradigm

Combining new skills with leading edge research and a sound business approach has delivered enduring success to farmers in the Murray Dairy region, an area which spans Northern Victoria and the Southern Riverina.

Jeff Odgers, Chairman of Murray Dairy Inc is a Victorian dairy farmer who describes himself 'as a bloke who's always had a passion for farming'. Jeff runs a 400 cow dairy farm near Shepparton, and manages a neighbouring 700 cow farm.

A farm accident seven years ago was the catalyst for Jeff to return to study and complete a business degree. Together with VET qualifications, experience gained in growing up on a dairy farm and the latest research, this tailored mix of skills and knowledge has enabled Jeff to manage and sustain his business under severe and prolonged drought and climate variation.

Prior to 2002, the region's competitive advantage was underpinned by a highly reliable irrigation water supply and excellent access to local stock feed supplies. This quickly changed for the worse over recent years, with a volatile operating environment the order of the day. Despite a drop in milk production, the region in 2008 remained Australia's largest milk production area, providing 22.5% of national production.

With funding assistance from Dairy Australia and consultant advice, the Murray Dairy team developed 11 Dairy Business Network Groups that have assisted farmers in the region to not only sustain their businesses in adverse and variable circumstances, but also validate a methodology and approach for solid decision making in complex financial and climatic environments.

The essence of Jeff's and other leading dairy farmers approach in the region is the skills to run flexible systems and interchange key inputs within systems - like managing access to grain and water, their cost and their efficiency of use in terms of overall productivity and sustainability. Returns from milk production relative to the price of available inputs such as water and food mixes, determines the likely production system for a given time or season.

"Training in isolation, no matter how good, isn't enough to run a business. It needs to be a practical solution, based on the needs of my business, and combined with the most up to date research and knowledge."

Integration of practical skills, business management and the latest research is a consistent message heard across the AgriFood industries, and one of three key strategies identified in the Environmental Scan as fundamental to the industry's sustainable growth.

Section 3 – current impact of training packages

AgriFood learner profile

No typical learner profile exists within the industry due to the diversity of AgriFood and the nature of its sectors which comprise:

- Large scale multi-nationals through to micro businesses
- Rural and remote based operations through to those in the major capital cities
- Terrestrial and water based environments
- Casual, seasonal based employment through to family owned operations
- A significant proportion of workers with low level language, literacy and numeracy skills, and from non-English speaking backgrounds

Diversity of this magnitude is the driving force behind the level of flexibility now being built into AgriFood Training Packages. It also underscores the need for training providers to have the capabilities necessary to maximise this inherent flexibility and turn it into individually designed skill solutions for learners and enterprises alike.

Publicly funded delivery of Training Package qualifications

AgriFood Skills Australia maintains and continuously improves 10 Training Packages on behalf of its industries and reflective of its broad coverage. Publicly funded enrolments and completions by learners in these Training Packages are captured in the national data collections (Figure 2) and while only reflecting a relatively small proportion of Training Package usage, on face value the **low completion rates** in several areas could be perceived as declining support for the product.

But consultations and feedback from industry strongly disagree that the issue is their value or relevance. Rather, it reinforces industry's message that for several sectors, full qualifications are not the goal, and as a consequence, once learners have acquired the sought after skills, they withdraw from the remainder of the qualification and the publicly funded system.

A second area of concern is the downward trend of '**persons in training'** which could be taken as an indication of industry's declining commitment to training its people. But this too is strongly rejected by industry as a substantive trend, the advice being that:

- Strong labour market conditions resulted in high levels of labour mobility and chronic labour shortages across the sectors, and therefore reduced numbers in formal training generally;

FIGURE 2. Publicly funded training effort 2007 – in training and completion

Code	Training Package	Persons in training in 2007 (Full qualifications)	In training trend from 2006	Learner completions in 2007 (Full qualifications)
FDF	Food Processing	14,336	-749 ↓	6,172
MTM	Meat	11,171	-2,139 ↓	7,024
RGR	Racing	1,251	-244 ↓	347
RTD	Conservation and Land Management	7,242	-2,848 ↓	1,472
RTE	Rural Production	18,955	-5,275 ↓	5,344
RTF	Amenity Horticulture	20,498	-3,532 ↓	5,394
RUV	Animal Care and Management	5,444	+449 ↑	1,566
SFI	Seafood	3,013	+948 ↑	492
SUG	Sugar Milling	4	-136 ↓	0

Source: NCVER

- In the absence of short, sharp targeted programs and the system's continued emphasis on full qualifications, both employers and learners are opting for informal or non accredited training as a means of acquiring the required skills;
- Sector specific/ regional issues such as equine flu and the drought have forced some enterprises to cut staffing levels, again flowing through to numbers in formal training.

Supporting workforce development more broadly …

How quickly and how extensively the AgriFood industry has engaged with Training Packages is not well publicised or understood – the tendency being to make conclusions based on the amount of publicly funded delivery hours, enrolments and learner completions.

For AgriFood, the national data collections represent a very small part of their impact and usage. The following examples provide an insight into the role of Training Packages in business, the broader economy and community, and the extent to which training occurs outside of the publicly funded system.

- **Assuring community safety**
  Every food business in Victoria is required to have a Food Safety Supervisor in accordance with the Food Safety Act 1984. An estimated 40,000 food businesses are required to comply and routinely applies to food manufacturers, retailers, hotels and restaurants; organisations such as childcare centres, hospitals, hostels and warehouses must also comply. All supervisors are required to hold a Statement of Attainment for the food safety units contained in the Food Processing Training Package.
- **Underpinning workforce development**
  Training Packages are increasingly being utilised as a basis for job design and performance management. Department of Natural Resources (NSW) and Department of Environment and Conservation (WA) are just two organisations which have used the Conservation and Land Management Training Package to classify job roles for over 2,300 staff members.
- **Building social commitment**
  Green Corps provides young people with the opportunity to volunteer to conserve, preserve and restore Australia's natural environment and cultural heritage. Participants achieve Certificate I or Certificate II in Conservation and Land Management as a minimum training requirement in addition to occupational health and safety, and first aid training. The program offers up to 1700 placements each year for young people between the ages of 17 – 20 years. Since the programme began, more than 18,000 young Australians have joined Green Corps projects across Australia; more than 14 million trees have been planted; 8000 kilometres of fencing has been built; and more than 5000 kilometres of walking track has been constructed or maintained.

Section 4 – future directions for endorsed components of training packages

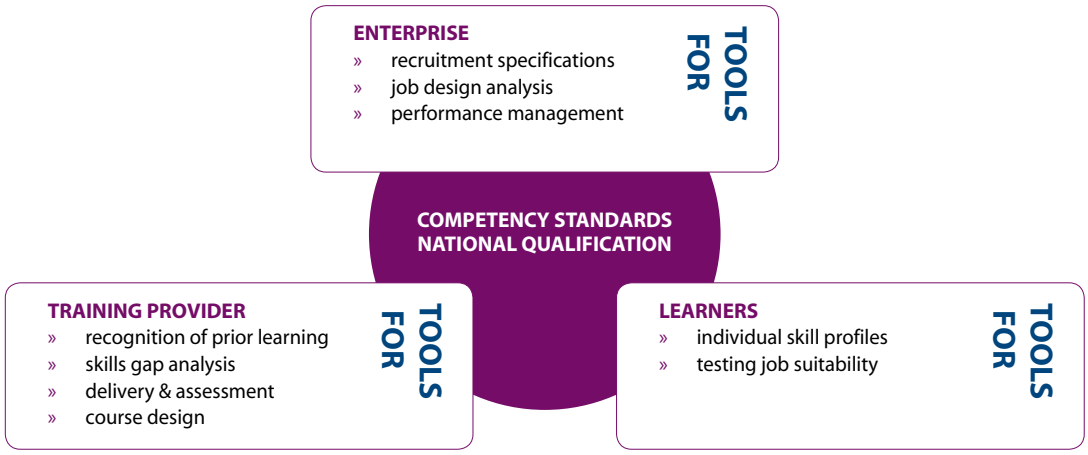
Systematic workforce development strategy

There is broad agreement across industry and training providers that 'Training Packages' need to be renamed and their content simplified to more accurately reflect their role and centrality in skills and workforce development - and remove the misguided perception by some that they are imperfect curriculum. Under pressure to 'be all things to all people' **Training Packages have become complex and sometimes unwieldy documents** which detract from their purpose of defining work outcomes and reduce their overall relevance to industry. In particular, the absence of contemporary support materials has resulted in the mandated template for units of competency growing in complexity and size by inclusion of guidance on delivery and assessment.

There is also a need to reassert publicly what industry has understood from the outset – that the value of competency standards and qualifications goes far beyond the codification of skills and knowledge and being the benchmark for learning and development. **When used as part of an integrated skills and workforce development system, they represent the gold standard in how to develop and utilise human capital.** This subtle but critical differentiation between *developing* human capital and its subsequent *utilisation* is the key to the nation's competitive advantage.

AgriFood Skills Australia's future directions for Training Packages are driven by this higher objective of developing a world class workforce with world class skills – involving the on-going improvement of the Training Packages, but at the same time developing a **complementary suite of workforce development products and tools** (Figure 3).

FIGURE 3. Systematic workforce development - tools derived from AgriFood Training Packages



In summary, AgriFood Skills Australia's goal is to establish:

- **Competency standards** that clearly define the performance expected by industry in the workplace
- **Qualifications and skill sets** that present the opportunity for a diverse workforce to align their jobs and skilling requirements to relevant and recognisable outcomes
- **Assessment advice** that is evidence based enabling more transparency and subsequent ownership by both industry and training providers
- Provision of **workforce development products** derived from training packages for use by industry, Registered Training Organisations and individual learners
- **Establishment and maintenance of an advanced content management system** to support and manage the continuous improvement process.

Inclusion of new skills and qualifications

New skills and knowledge will be added to AgriFood Skills Australia's training and workforce development products over the next 12 – 18 months and reflect the overriding issues impacting on industry:

- Animal behaviour, health and welfare
- Animal transportation
- Artisan baking
- Aquarium ornamentals
- Bio diversity
- Bio fuels
- Biosecurity
- Biotechnology
- Brewing
- Bush regeneration
- Carbon sequestration
- Environmental management and sustainability
- Food science and technology
- Futures trading
- Flour milling
- Food nutrition and management
- Genetics
- Landscape design
- Machinery GPS
- Master cheese making
- Nutrient monitoring
- Performance horse management
- Pest and disease management
- Seed certification
- Seed collection and identification
- Soil health and biology
- Supply chain management
- Wetland management

New qualifications for Agribusiness at the Graduate Certificate and Diploma levels are currently under development.

Appendix A – continuous improvement of training packages over previous 12 month period

During the 12 month period to February 2009, AgriFood Skills Australia has continued to simplify the structure and increase the level of flexibility within its Training Packages, all with the intent of responding to the evolving nature of job roles within the industry (Figure 4). A reviewed and extended Racing Training Package and additions to the Meat Training Package were both endorsed by the National Quality Council (NQC) during 2008 (Figure 5. and Figure 6. respectively).

Formal reviews of the Food Processing, Seafood and Animal Care and Management Training Packages are underway at the time of writing but yet to be submitted for endorsement.

Three further Training Packages – Amenity Horticulture, Rural Production, Conservation and Land Management – are also under review and will be submitted to the NQC for endorsement during 2009 as a single Training Package.

FIGURE 4. Summary of continuous improvement to AgriFood Training Packages during the last 12 month period

SUMMARY TABLE OF CONTINUOUS IMPROVEMENT		
Training Package Code	Training Package Title	Summary of continuous improvement activity over the last 12 month period
AGF07	AgriFood	No change
FDF03	Food Processing	No change (under review)
MTM07	Meat	Multiple changes (details as Figure 6)
RGR08	Racing	Multiple changes (details as Figure 5)
RTD02	Conservation and Land Management	No change (under review - three Training Packages being merged)
RTE03	Rural Production	
RTF03	Amenity Horticulture	
RUV04	Animal Care and Management	No change (under review)
SFI04	Seafood	No change (under review)
SUG02	Sugar Milling	No change

FIGURE 5. Details of Racing Training Package continuous improvement

RACING TRAINING PACKAGE RGR08 – DETAILS				
Brief summary of change	Industry imperatives/ rationale for change	Date submitted to NQC secretariat	Date endorsed by NQC	Date made public through NTIS
Addition of Racing Operation Services qualifications in Racing Administration, Racing Steward, Track Maintenance	Skills Gaps	May 2008	June 2008	Sept 2008
Introduction of Licensing and Registration skill sets and Approval to Operate skills sets	Align training standards to industry licensing, regulation and race day operation requirements	May 2008	June 2008	Sept 2008
Enhancement and realignment of Performance Services qualifications and units of competency covering stablehand, kennelhand, trackwork rider and driver, jockey, harness driver, horse and greyhound trainers	Realignment of AQF levels to meet industry job outcome requirements and health and safety standards	May 2008	June 2008	Sept 2008

FIGURE 6. Details of Meat Training Package continuous improvement

MEAT TRAINING PACKAGE MTM07 V2.1 – DETAILS				
Brief summary of change	Industry imperatives/ rationale for change	Date submitted to NQC secretariat	Date endorsed by NQC	Date made public through NTIS
Introduction of Animal Welfare skills set	To meet industry requirements for managing animal welfare in an Australian meat processing plant	June 2008	Noted as continuous improvement from version 2.0 to 2.1	Sept 2008

Appendix B – methodology and bibliography

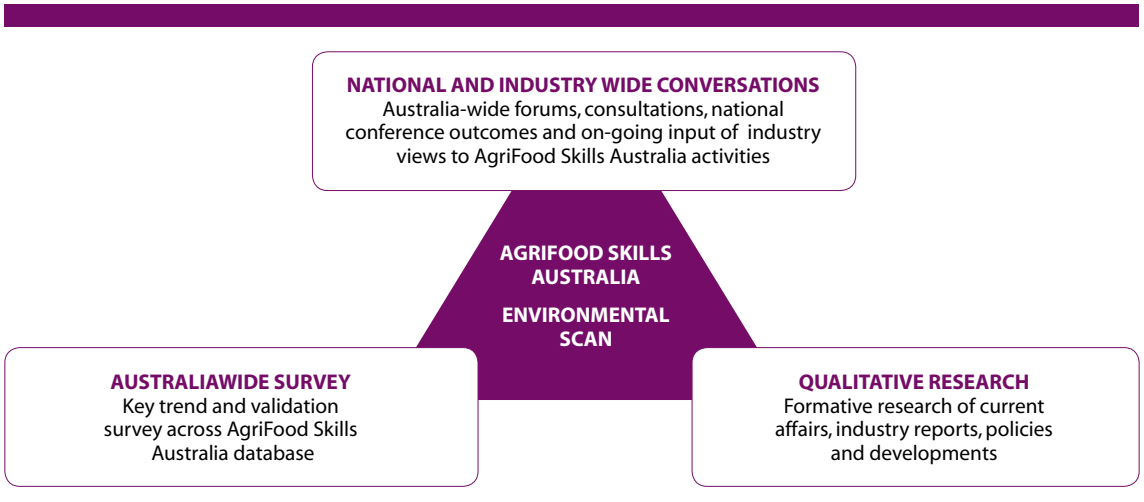
Using the simple principle of triangulation, the Environmental Scan uses three separate sources for gathering and validating the intelligence and trends articulated in the document (Figure 7). Given the financial climate, and the evolving nature of its impact on businesses as the consultation progressed, AgriFood Skills Australia has not sought to place a heavy emphasis on quantitative data collection. It is and will continue to change rapidly.

Our focus, and one which we believe is of significantly more value to the education and training system is to understand the areas of evolving need, both in terms of emerging skill areas for new and existing workers, and those sectors witnessing new and evolving job roles.

Our conversations

- AgriFood Skills Australia national conference, September 2008 – attendance by 190 representatives from industry, employer and employee peak bodies, training providers and enterprises
- Australia wide consultative forums and meetings, December 2008 to February 2009 – attendance by over 200 key industry and government stakeholders in Brisbane, Sydney, Melbourne, Hobart, Launceston, Darwin, Perth, Canberra and Adelaide
- On-going informal conversations with enterprise leaders and workforce managers throughout 2008-2009 in the continuous improvement of Training Packages regarding evolving and new job roles, new skills and skilling solutions
- AgriFood Skills Australia business model and consultative structure of standing committees and other networks which have provided on-going advice and input to the ISC's activities throughout 2008-2009
- Participation/ presentation at industry conferences including: the Seafood Workforce and Training Summit, the National Irrigation Conference; MINTRAC National Conference and the Wool Industry Workshop
- Ongoing interactions with State Training Authorities and their industry advisory bodies on continuous improvement of Training Packages and discussion on industry skills and workforce needs.

FIGURE 7. Research methodology of the AgriFood Environmental Scan



Our survey

A targeted key trend and validation survey was distributed electronically to the AgriFood Skills Australia database during December 2008 – February 2009. The survey focused on the drivers impacting on skills and workforce development, emerging skills, evolving/ new job roles and skilling solutions. The findings have been used to validate formative research on drivers and their impact, to get a sense of magnitude of issues and timing:

- Over 260 responses were received comprising 23 per cent from large employers (50> employees); 36 per cent from small and medium sized enterprises (5-50 employees); and 41 perc ent from micro businesses (<5 employees)
- Over 33 per cent were from rural Australia; 13 per cent from remote Australia; and 30 per cent regional Australia. 24 per cent were located in metropolitan cities and towns.

Our research

Daily media bulletin

October 2008 – February 2009

Online announcements in the sciences, technology, innovation, education and environment from the Federal Parliamentary Press Gallery.

Major daily broadsheets

January – February 2009

Online

October 2008 – February 2009:

Abare
www.abareconomics.com
AgForce Queensland
www.agforceqld.org.au
Australian Fisheries Management Authority
www.afma.gov.au
Australian Food and Grocery Council
www.afgc.org.au
Australian Food News
www.ausfoodnews.com.au
Australian Racing Board
www.australianracingboard.com.au
Dairy Australia
www.dairyaustralia.com.au
Department of Agriculture, Forestry and Fisheries
www.daff.gov.au
Farmonline
www.farmonline.com.au
Food Standards Australia New Zealand
www.foodstandards.gov.au
Garnaut Climate Change Review
www.garnautreview.org.au
Insight
www.news.sbs.com.au/insight
LandcareOnline
www.landcareonline.com.au
Landline
www.abc.net.au/landline
Meat and Livestock Australia
www.mla.com.au
National Farmers Federation
www.nff.org.au
NSW Food Authority
www.foodauthority.nsw.gov.au
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www.trendwatching.com

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Meat and Livestock Australia (2008) *Attracting and retaining staff in the Australian pastoral industry*

National Farmers' Federation (2008) *Annual Review 2007-2008*

National Farmers' Federation (2008) *Labour shortage Action Plan 2008*

National Farmers' Federation (2008) *Summary of labour shortages in the agricultural sector*

NSW Department of Primary Industries (2008) *Learning needs of landholders in central and western NSW*

Putnis, Josif and Woodward (2007) *Healthy Country, Healthy People: Supporting Indigenous Engagement in the Sustainable Management of Northern Territory Land and Seas: A Strategic Framework*

QLD Department of Primary Industries (2008) *Queensland rural skills and training demand report*

QLD Department of Primary Industries (2008) *Skills for the future of food and agriculture. Discussion Paper*

Reuters UK (January 2009), *Australia's wine industry at a crisis crossroad*

SmithComyn & Associates (2006) *The role of VET in Australia's AgriFood innovation system: lessons for other industry sectors*

Victorian Food Industry Training Board (2008) *Food Processing Industry Change Drivers and Issues for Skills Development*

Appendix C – occupations and qualifications in demand

IMPORTANT

The narrative approach to Environmental Scans remains the most meaningful 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, it breathes life into statistics, provides an understanding of how these drivers impact, and how any changes are likely to require an adjustment to training provision.

But there remains a real disconnect between how the bulk of AgriFood sectors acquire skills, and the currency by which the training system typically offers, plans and funds training. Simply put, the system talks full qualifications, by comparison the bulk of industry talks skills and learns through a 'building blocks' approach to acquisition.

The following table is a mandated requirement of the Environmental Scan. It requires that the trends outlined in the Scan be translated into occupational need and the corresponding qualification – even though only part of the qualification or a discrete set of skills may be needed. This disconnect can be seen in the first piece of advice below relating to Farm Managers, where 42,000 are the target of improved sustainability practices under the *Caring for Country* policy - this does not translate into the need for 42,000 Diplomas or Certificates, simply the discrete skills found within the relevant qualification. It is therefore strongly recommended that the following table be read in consultation with AgriFood Skills Australia and the relevant enterprise to determine the actual need of the learner.

Rural industries, agriculture, horticulture, animal care, conservation and land management

ANZSCO Code	Occupation	Qualification	Justification/evidence (qualitative and/or quantitative data)
121	Farmers and Farm Managers	RTE40103 Certificate IV in Agriculture RTE40603 Certificate IV in Rural Business RTE50103 Diploma of Agriculture RTE50403 Diploma of Rural Business Management RTE60203 – Advanced Diploma of Rural Business Management	National Farmers Federation - Labour shortages in the agricultural sector, 2008. Shortfall stated 34,000 Australian Government policy commitment to improve the skills and knowledge of 42,000 land managers and farmers in sustainable farm and land management practices as part of the 'Caring for our Country' policy Direct confirmation from 2009 Environmental Scan Survey
1212	Crop Farmers	RTE40103 Certificate IV in Agriculture RTE40603 Certificate IV in Rural Business RTE50103 Diploma of Agriculture RTE50403 Diploma of Rural Business Management	National Farmers Federation - Labour shortages in the agricultural sector, 2008. Shortfall stated 18,000 Australian Government policy commitment to improve the skills and knowledge of 42,000 land managers and farmers in sustainable farm and land management practices as part of the 'Caring for our Country' policy

ANZSCO Code	Occupation	Qualification	Justification/evidence (qualitative and/or quantitative data)
1213	Livestock Farmers	RTE40103 Certificate IV in Agriculture RTE40603 Certificate IV in Rural Business RTE50103 Diploma of Agriculture RTE50403 Diploma of Rural Business Management	National Farmers Federation - Labour shortages in the agricultural sector, 2008. Shortfall stated 14,000 Australian Government policy commitment to improve the skills and knowledge of 42,000 land managers and farmers in sustainable farm and land management practices as part of the 'Caring for our Country' policy
121316	Horse Breeder	New qualification to be endorsed 2009	Direct confirmation from 2009 Environmental Scan consultations
234111	Agricultural Consultant (Advisor)	RTE40103 Certificate IV in Agriculture RTE40603 Certificate IV in Rural Business RTE50103 Diploma of Agriculture RTE50403 Diploma of Rural Business Management RTE60103 Advanced Diploma of Agriculture RTE60203 Advanced Diploma of Rural Business Management	Australian Government policy commitment to improve the skills and knowledge of 42,000 land managers and farmers in sustainable farm and land management practices as part of the 'Caring for our Country' policy Economic, industry and skills related policy statements have highlighted that higher-level technical skills are directly linked to productivity across production industries. The job role is critical in diffusing new practice and technology for sustainability and carbon reduction across enterprises.
234112	Agricultural Scientist	RTE50103 Diploma of Agriculture RTE60103 Advanced Diploma of Agriculture	Australian Government policy commitment to review of the biosecurity and quarantine system – One Biosecurity. Commits to increased training for biosecurity officials and industry as part of shared responsibility for the new system. Farm Policy Journal 2008 cites demand for 2000 graduates in science and technology fields - completions of 800 and declining. Diploma and Advanced Diploma form alternative pathways into the field of study.
3612	Shearers	RTE20403 Certificate II in Shearing RTE31503 Certificate III in Shearing RTE40403 Certificate IV in Shearing	National Farmers Federation - Labour shortages in the agricultural sector, 2008. Shortfall stated 2,000 Direct confirmation from 2009 Environmental Scan Survey
362212	Arborist (Tree Surgeon)	RTF20203 Certificate II in Horticulture (Arboriculture) RTF30203 Certificate III in Horticulture (Arboriculture) RTF40203 Certificate IV in Horticulture (Arboriculture) RTF50203 Diploma of Horticulture (Arboriculture)	Currently listed under Productivity Places Program Direct confirmation from 2009 Environmental Scan Survey
362213	Landscape Gardener	RTF20403 Certificate II in Horticulture (Landscape) RTF30403 Certificate III in Horticulture (Landscape) RTF40403 Certificate IV in Horticulture (Landscape) RTF50403 Diploma of Horticulture (Landscape)	Currently listed under Productivity Places Program

ANZSCO Code	Occupation	Qualification	Justification/evidence (qualitative and/or quantitative data)
3624	Nurserypersons	RTF30503 Certificate III in Horticulture (Retail Nursery) RTF30603 Certificate III in Horticulture (Wholesale Nursery) RTF40503 Certificate IV in Horticulture (Retail Nursery) RTF40603 Certificate IV in Horticulture (Wholesale Nursery) RTF50503 Diploma of Horticulture (Retail Nursery) RTF50603 Diploma of Horticulture (Wholesale Nursery)	Currently listed under Productivity Places Program Direct confirmation from 2009 Environmental Scan Survey
7211	Mobile Plant Operators	RTE20103 Certificate II in Agriculture RTE20703 Certificate II in Rural Operations RTE30103 Certificate III in Agriculture RTE31903 Certificate III in Rural Operations RTD20102 Certificate III in Conservation and Land Management RTD30102 Certificate III in Conservation and Land Management	National Farmers Federation - Labour shortages in the agricultural sector, 2008. Shortfall stated 4,000 Australian Government policy commitment to improve the skills and knowledge of 42,000 land managers and farmers in sustainable farm and land management practices as part of the 'Caring for our Country' policy
8414	Garden and Nursery Workers	RTF20503 Certificate II in Horticulture (Retail Nursery) RTF20603 Certificate II in Horticulture (Wholesale Nursery)	Currently listed under Productivity Places Program Direct confirmation from 2009 Environmental Scan Survey
8419	Mixed Crop And Livestock Farm Workers (Farm Hand)	RTE20103 Certificate II in Agriculture RTE20703 Certificate II in Rural Operations RTE30103 Certificate III in Agriculture RTE31903 Certificate III in Rural Operations RTE20603 Certificate II in Production Horticulture RTE31603 Certificate III in Production Horticulture RTE40503 Certificate IV in Production Horticulture	National Farmers Federation - Labour shortages in the agricultural sector, 2008. Shortfall stated 21,000 Australian Government policy commitment to improve the skills and knowledge of 42,000 land managers and farmers in sustainable farm and land management practices as part of the 'Caring for our Country' policy Direct confirmation from 2009 Environmental Scan Survey
234311	Conservation Officer	RTD20102 Certificate II in Conservation and Land Management RTD30102 Certificate III in Conservation and Land Management RTD40102 Certificate IV in Conservation and Land Management RTD50102 Diploma of Conservation and Land Management RTD60102 Advanced Diploma of Conservation and Land Management	Job roles critical to combating climate change as per government policy 'Australia's Farming Future' Australian Government commitment to employ an additional 300 Indigenous Rangers as part of the 'Caring for our Country' policy
234312	Environmental Consultant	RTD50102 Diploma of Conservation and Land Management RTD60102 Advanced Diploma of Conservation and Land Management	Job roles critical to combating climate change as per government policy 'Australia's Farming Future'

ANZSCO Code	Occupation	Qualification	Justification/evidence (qualitative and/or quantitative data)
234314	Park Ranger	RTD30102 Certificate III in Conservation and Land Management RTD40102 Certificate IV in Conservation and Land Management RTD50102 Diploma of Conservation and Land Management RTD60102 Advanced Diploma of Conservation and Land Management	Job roles critical to combating climate change as per government policy 'Australia's Farming Future' Australian Government commitment to employ an additional 300 Indigenous Rangers as part of the 'Caring for our Country' policy Direct confirmation from 2009 Environmental Scan Survey
311111	Agricultural Technician	RTD30102 Certificate III in Conservation and Land Management RTD40102 Certificate IV in Conservation and Land Management RTD50102 Diploma of Conservation and Land Management RTD60102 Advanced Diploma of Conservation and Land Management	Job role critical to combating climate change as per government policy 'Australia's Farming Future'
361311	Veterinary Nurse	RUV40404 Certificate IV in Veterinary Nursing	Direct confirmation from 2009 Environmental Scan Survey and consultations
399999	Animal Technician	RUV30104 Certificate III in Animal Technology	Direct confirmation from 2009 Environmental Scan Survey and consultations
322113	Farrier	New qualification to be endorsed 2009	Direct confirmation from 2009 Environmental Scan Survey and consultations
599514	Noxious Weeds and Pest Inspector	RTD20102 Certificate II in Conservation and Land Management RTD30102 Certificate III in Conservation and Land Management RTD40102 Certificate IV in Conservation and Land Management RTD50102 Diploma of Conservation and Land Management RTD60102 Advanced Diploma of Conservation and Land Management	Australian Government commitment to employ an additional 300 Indigenous Rangers as part of the 'Caring for our Country' policy Job roles critical to combating climate change as per government policy 'Australia's Farming Future'

Food, beverages and pharmaceuticals

ANZSCO Code	Occupation	Qualification	Justification/evidence (qualitative and/or quantitative data)
3511	Bakers and Pastry Cooks	FDF20303 Certificate II in Food Processing (Plant Baking) FDF30303 Certificate III in Food Processing (Plant Baking) FDF30603 Certificate III in Food Processing (Retail Baking - Bread) FDF30703 Certificate III in Food Processing (Retail Baking - Combined) FDF30503 Certificate III in Food Processing (Retail Baking – Cake and Pastry) FDF40103 Certificate IV in Food Processing	Currently listed under Productivity Places Program Direct confirmation from 2009 Environmental Scan Survey
8311	Food and Drink Factory Workers	FDF20103 Certificate II in Food Processing FDF30103 Certificate III in Food Processing	Current shortages are becoming more critical for the continuation of this important local and export industry Direct confirmation from 2009 Environmental Scan Survey
831312	Poultry Process Worker	FDF20103 Certificate II in Food Processing FDF30103 Certificate III in Food Processing	Current shortages are becoming more critical for the continuation of this important local and export industry Direct confirmation from 2009 Environmental Scan consultation and largest Australian producer
234212	Food Technologist	FDF40103 Certificate IV in Food Processing FDF50103 Diploma of Food Processing	Direct confirmation from 2009 Environmental Scan Confirmation from Australian Institute of Food Science and Technology Incorporated – Future Needs and Priorities 2008 Report

Racing industry

ANZSCO Code	Occupation	Qualification	Justification/evidence (qualitative and/or quantitative data)
841516	Stablehand (Track rider)	RGR20102 Certificate II Racing (Stablehand) RGR30102 Certificate III Racing (Trackrider)	Recent survey conducted by Racing Victoria across Victoria, NSW and WA found 88% of trainers experiencing difficulties employing the services of trackriders and stablehands Direct confirmation from 2009 Environmental Scan Survey Chandler McLeod 2008 WA Workforce Planning Project
452413	Jockey (Harness Driver)	RGR30402 Certificate III Racing (Harness Driver) RGR40202 Certificate IV Racing (Jockey) RGR40302 Certificate IV Racing (Advanced Harness Driver)	The industry has suffered from a reported shortage of jockeys for many years. The industry has used immigration to fill many of these positions, and remains particularly critical in rural and remote areas. Chandler McLeod 2008 WA Workforce Planning Project Direct confirmation from 2009 Environmental Scan Survey

Meat industry

ANZSCO Code	Occupation	Qualification	Justification/evidence (qualitative and/or quantitative data)
139914	Quality Assurance Managers	MTM40307 Certificate IV in Meat Processing (Quality Assurance)	Currently listed under Productivity Places Program Direct confirmation from 2009 Environmental Scan consultations
311312	Meat Inspector	MTM30207 Certificate III in Meat Processing (Meat Safety) MTM40207 Certificate IV in Meat Processing (Meat Safety)	Currently listed under Productivity Places Program Direct confirmation from 2009 Environmental Scan consultations
3512	Butchers and Smallgoods Maker	MTM20307 Certificate II in Meat Processing (Meat Retailing) MTM20407 Certificate II in Meat Processing (Food Services) MTM30607 Certificate III in Meat Processing (General) MTM30807 Certificate III in Meat Processing (Meat Retailing) MTM40107 Certificate IV in Meat Processing (Leadership) MTM40307 Certificate IV in Meat Processing (Quality Assurance) MTM40407 Certificate IV in Meat Processing (General) MTM20207 Certificate II in Meat Processing (Smallgoods) MTM30907 Certificate III in Meat Processing (Smallgoods – General) MTM31007 Certificate III in Meat Processing (Smallgoods – manufacture)	Currently listed under Productivity Places Program Direct confirmation from 2009 Environmental Scan Survey and consultations
8312	Meat Boners and Slicers and Slaughterers	MTM20107 Certificate II in Meat Processing (Abattoirs) MTM30107 Certificate III in Meat Processing (Boning Room) MTM30507 Certificate III in Meat Processing (Slaughtering)	Australian Meat Industry Council recently surveyed industry regarding current and anticipated (next 12 months) skill and labour shortages. The industry has a current shortage of 696 boners, slicers and slaughterers, and anticipated shortage of 1,394.
831311	Meat Process Worker	MTM20107 Certificate II in Meat Processing (Abattoirs) MTM20407Certificates II in Meat Processing (Food Services) MTM30207 Certificate III in Meat Processing (Food Services) MTM30607Certificate III in Meat Processing (General) MTM30407Certificate III in Meat Processing (Rendering)	Recognised pathway into critical shortage areas of boner, slicer, slaughterer Direct confirmation from 2009 Environmental Scan consultations

Seafood industry

ANZSCO Code	Occupation	Qualification	Justification/evidence (qualitative and/or quantitative data)
1211	Aquaculture Farmers	SFI 30104 Certificate III in the Seafood Industry Aquaculture SFI 40104 Certificate IV in the Seafood Industry Aquaculture	Direct confirmation from major aquaculture enterprises Advertisements for vacancies in newspapers (37 out of the last 52 weeks) in Tasmania. Time taken to fill the vacancies is increasing Direct confirmation from 2009 Environmental Scan Survey and consultation
831313	Seafood Process Worker	SFI20504 Certificate II in Seafood Processing SFI30504 Certificate III in Seafood Processing	Direct confirmation from 2009 Environmental Scan Survey and consultation
8992	Deck and Fishing Hands	SFI20204 Certificate II in Seafood Industry (Fishing Operations) SFI30304 Certificate III in Seafood Industry (Fishing Charter Operations) SFI31204 Certificate III in Seafood Industry (Fishing Operations)	Direct confirmation from major aquaculture and wild catch enterprises Direct confirmation from 2009 Environmental Scan Survey and consultation
399999	Seafood Post Harvest Technician	SFI40504 in Seafood Industry (Seafood Processing) SFI40604 in Seafood Industry (Seafood Sales and Distribution)	Direct confirmation from 2009 Environmental Scan Survey and consultation
231211	Master Fisher	SFI32204 Certificate III in Seafood Industry (Fishing Operations – Marine Engine Driver II) SFI33204 Certificate III in Seafood Industry (Fishing Operations – Master 5/Skipper 3) SFI41204 Certificate IV in Seafood Industry (Fishing Operations) SFI42204 Certificate IV in Seafood Industry (Fishing Operations – Marine Engine Driver 1)	Direct confirmation from 2009 Environmental Scan Survey and consultation Direct confirmation from major aquaculture and wild catch enterprises