

Tasmanian Primary Industries Workforce Development Scan 2015-16



ACKNOWLEDGEMENT:

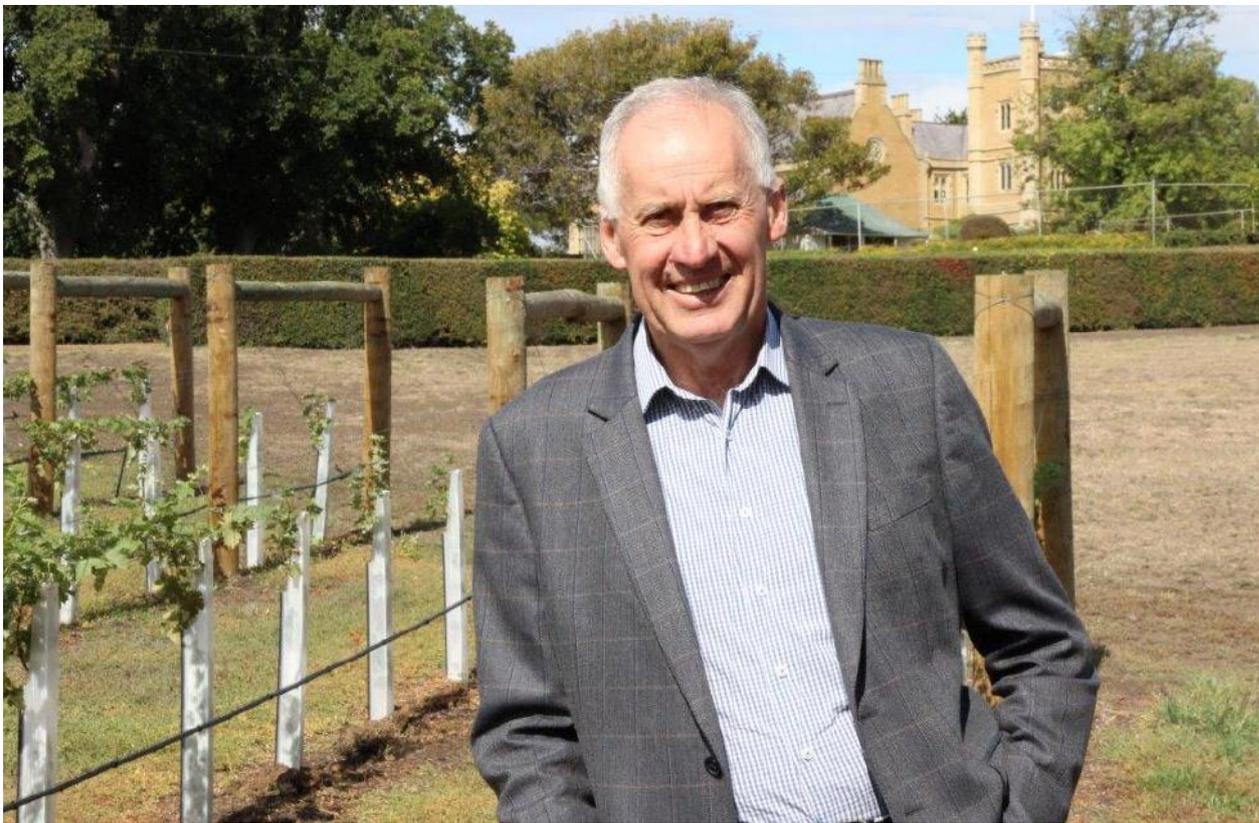
This Scan has prepared by the Tasmanian Farmers & Graziers Association (TFGA) with the financial support of the Tasmanian Government under the Cultivating Prosperity in Agriculture Initiatives; as well as through consultation and collaboration with industry, including the Agriskills Reference Panel and individuals who generously gave of their time and expertise.

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ABBREVIATIONS

ABARE	Australian Bureau of Agricultural Economics
ABS	Australian Bureau of Statistics
Ac	Acres
ACARA	Australian Curriculum Assessment and Reporting Authority
ACDA	Australian Councils of Deans Australia
AFI	Australian Farm Institute
ATV	All-Terrain Vehicle
CTDHS	Campbell Town District High School
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CRICOS	Commonwealth Register of Institutions and Courses for Overseas Students
DoE	Department of Education
DT	Dairy Tas
EVAO	Estimated Value of Agricultural Output
FGT	Fruit Growers Tasmania
FIFO	Fly-in-fly-out
GVAP	Gross Value of Agricultural Production
GMO	Genetically Modified Organism
HSF	Hagley School Farm
Ha	Hectares
HGP	Hormone Growth Promotant
HR	Human Resources
IR	Industrial Relations
LGA	Local Government Authority
ML	Megalitres
MLA	Meat and Livestock Australia
NBN	National Broadband Network
NCDEA	National Centre of Dairy Education Australia
NEST	National Agribusiness Education, Skills and Labour Taskforce
NFF	National Farmers Federation
NRAC	National Rural Advisory Council
PD	Professional Development
PIEFA	Primary Industries Education Foundation of Australia
RIRDC	Rural Research and Development Corporations
R&D	Research and Development
RPL	Recognition of Prior Learning
RTO	Registered Training Organisation
SOL	Skilled Occupation List
TI	Tasmanian Irrigation
TAEN	Tasmanian Agricultural Education Network
TAFE	Technical and Further Education
TAPG	Tasmanian Agricultural Productivity Group
TFGA	Tasmanian Farmers & Graziers Association
VET	Vocational Education and Training
WHS	Work Health and Safety



Foreword

In 2014 the Tasmanian Government announced a 2050 vision for agriculture with a commitment to grow the value of the agriculture sector by tenfold to \$10 billion per year by 2050. A key part of the Agrivision 2050 Plan is to revitalise agricultural education and training in Tasmania with government support to enhance employment expertise in agriculture by better aligning the skills required in the farming sector with the provision of agricultural education in the State.

In January 2015 the Honourable Will Hodgman MP, Premier of Tasmania, announced funding of \$450,000 towards the implementation of the Agricultural Skills Plan to be spearheaded by the Tasmanian Farmers & Graziers Association. A key component of the plan is to promote diversity of career pathways into agriculture including pre-farm gate activities and post-farm gate opportunities, which include business and finance, logistics, marketing and research and development.

Importantly, an Agriskills Reference Panel comprising representatives of industry, has been convened to provide advice on the quality and effectiveness of existing and future education and training needs.

As a first step, a review of Tasmania's primary industries workforce development has been completed. The Scan presents a comprehensive picture of today's agriculture sector including opportunities and challenges which may impact on the development of agriculture in Tasmania.

The content of this Scan has been compiled with feedback obtained from industry. Observations of any shortfalls or challenges should be seen as an opportunity to re-design, complement and strengthen industry's approach to workforce planning and development; the end goal is to enable the industry to remain competitive through the attraction and retention of a skilled workforce, and to identify strategies that will be self-sustaining into the future.

The fulfillment of the Government's Agrivision 2050 strategy relies on industry and its stakeholders working more collaboratively. The willingness of most sectors of the industry to invest and commit time in participating in the Agriskills Reference Panel is both vital and most welcome.

Mr. Richard Warner

Independent Chairperson, Agriskills Reference Panel.

INTRODUCTION

Leadership for the industry is more important than ever in unlocking the potential of the primary industries sectors in Tasmania and the Tasmanian Primary Industry Workforce Development Scan (the Scan) is one of the tools to facilitate the ongoing discussion required to continually advance the sector.

While TFGA have compiled this document, this Scan belongs to the sector. The objective of developing this document was to capture the views and aspirations of the industry; and TFGA believe that the Scan is the first of its kind for primary industries in Tasmania.

The audience for this body of work is purposely wide and varied. The reason for this was to enhance the sectors capacity to lead, inspire and motivate the industry and stakeholders to reinvigorate and strengthen the approach to workforce planning and development. This includes the uptake of primary industries skills, education and training more broadly.

It is important to keep in mind that observations of any deficits or challenges in this space are not published to criticise current efforts by any industry stakeholder. Any commentary made should be seen as an opportunity build upon its current success; and to facilitate on ongoing dialogue on future strategies that will move the industry forward.

In order for this sector to remain competitive, and to achieve the State Government's aspirational *Agrivision 2050 Plan*, the focus needs to be on attracting, retaining and developing a motivated and productive workforce. We can only do that by identifying the approaches that unlock the human capital potential, which will in turn drive new markets and growth opportunities across the whole industry value chain.

While the focus of this Scan is to capture the industry intelligence on workforce planning and development, including perceptions, needs and opportunities, it is recognised that each sector and/or region has its own set of diverse challenges when it comes to workforce development, and that meeting those challenges may require tailored solutions.

There were wide range of views and personal opinions identified during consultation of this document, however, this document reflects some common ground to provide a clear roadmap for the areas where industry and government can work together to drive growth. It will also inform future project plans, research, initiatives and analysis for the sector; and foster closer partnership between government, industry, education and the research sectors.

TFGA and the Agriskills Reference Panel welcomes written feedback of this scan. Submissions can be addressed to:

Tasmanian Farmers & Graziers Association

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EXECUTIVE SUMMARY

The purpose of this Scan is to build a comprehensive picture of the landscape of Tasmania's primary industries sector, from the education sector to the paddock, including the challenges, opportunities and emerging issues that may impact on workforce development capacity and capability.

Advances in technology and shifts in consumer expectations, combined with an aging workforce are just some of the factors that indicate to the primary industries sector, from the grass roots farmer to those shaping policy, the need to prioritise skills and workforce development. The Scan is an important basis for facilitating an ongoing discussion.

Compiling the contents of this Scan has involved extensive and in depth consultation with stakeholders from all levels of industry. There are a number of reasons for conducting this Scan, such as:

- To provide a foundation document that informs State Government purchasing decisions, for example, how it can support industry growth through targeted investment
- To provide a reference tool for Registered Training Organisations (RTOs) to build their businesses in a way that will revitalise the Vocational Educational and Training (VET) sector in Tasmania
- To inform industry employers of trends, challenges and opportunities relating to workforce development to assist in improving engagement between employers and employees.

The primary industry sector is important to the growth of the Tasmanian economy; and the industry acknowledges the State Government's aspirational Agrivision 2050 strategy as "significant", and "welcome" recognition of the role the sector plays in the economic development and prosperity of this State. The industry is a significant employer in Tasmania, particularly when combined with downstream processing. Understanding the trends, demographics and key drivers of our future workforce is important for growing the industry and attracting, retaining and developing a skilled and motivated a workforce.

It is imperative to ensure that the industry is showcased with a strong and positive message about the opportunities available from the education sector right through to the workforce. This is important for assisting the industry to be competitive and capable of attracting and recruiting a skilled workforce that can respond to the growth in demand for our food and fibre intrastate, nationally and globally.

The industry and its stakeholders, including government, have a large role to play in more effective communication and collaboration to reduce the duplication of projects that improve workforce development outcomes, principally around improving the effectiveness of promoting agriculture as a desirable career that can take you places.

In addition, this Scan investigates the supply and delivery of skills and training relating to primary industries in Tasmania and looks to identify opportunities for addressing the shortcomings. The focus areas identified within this Scan will inform Government on the best approaches to investment in skills, as well as informing the Agriskills Reference Panel (the Panel) on activities that can be included in the project plans for the life of the Agriskills Project.

Declining participation in nationally recognised training (enrolments and completions) is evidence that the industry would benefit from working together with RTOs to improve the engagement in training; and the that training is delivered effectively to enhance the needs of both the employee and employer. Equally, the industry must value and promote the importance of training and seek to improve its knowledge and skills.

The "she'll be right" or "just get on with it" approaches the industry has traditionally taken to workforce development no longer serves the sector. Enhanced ways to farm smarter, manage workforce more effectively and market the industry in a more positive and successful way must be found.

Advances in technology has changed the way we manage our enterprises and that will continue to shape our business practices into the future. Labour shortages are being experienced in several primary industry sectors, and while other industries are experiencing similar challenges, the sector needs to find innovative ways to address the current shortages, especially at a mid-management level.

PROJECT SCOPE

Methodology

In developing this Scan, the focus has been on identifying the current barriers to - and opportunities for - good workforce development practices and improving the promotion of career pathways in the sector. This has been achieved through a mix of one-on-one consultations and desktop research. Information from a variety of online and offline formats has been collated to determine the key issues affecting the productivity and growth of the industry in Tasmania since the establishment of the Agriskills Project.

Members of the Agriskills Reference Panel played a large role in informing this Scan. The Panel currently comprises:

Organisation:

Dairy Tas
Fruit Growers of Tasmania
Poppy Growers of Tasmania
Primary Employers of Tasmania
Rural Youth Organisation of Tasmania
Tasmanian Agricultural Productivity Group
Tasmanian Institute of Agriculture
Tasmanian Seafood Industry Council
Tasmanian Island Pork Alliance
Tasmanian Salmonid Growers Association
Tasmanian Farmers & Graziers Association

Represented by:

Mr Mark Smith
Mr Phil Pyke & Mr Sam Riggall
Mr Michael Badcock
Mr Keith Rice
Ms Karen Robinson & Ms Prue Dennis
Mr Terry Brient
Dr Laurie Bonney
Mr Julian Harrington
Mr Geoff Terry
Dr Adam Main
Mr Peter Skillern

In addition, TFGA consulted industry stakeholders including, but not limited to:

- Primary producers
- Industry development organisations
- Skills and training providers, including primary and tertiary providers
- Agribusiness pastoral houses and industry service providers
- Government Departments such as State Growth, Skills Tasmania, Education and DPIPW
- Rural Skills Australia
- Primary Industries Education Foundation.

Desktop research, namely, but not limited to, the review of reports and/or literature:

- Tasmanian Fruit Industry 2014 Skills Needs Analysis
- Dairy Industry Skills Plan (August 2009)
- Tasmanian Wine Sector Workforce Development Plan (August 2013)
- Agricultural Industry Skills Plan (October 2011 - June 2014)
- Racing Industry Skills Plan (January 2010 - December 2012)
- Small Business Skills Plan (Tas) (December 2013);
- Tasmanian Transport, Freight and Logistics Industry Skills Plan (January 2011)
- National Farmers Federation Assessment of Agricultural Employers Planning Capabilities to the National Rural Advisory Council (NRAC) (April 2013)
- NRAC Workforce Planning Capabilities on Agricultural Employers
- Agribusiness Skills Pipeline Program, Report on Consultation Phase 1 (RDS Partners Pty Ltd, 31 March 2011)
- Final Report – Skills Needs Analysis for the Tasmanian Fruit Industry (Agrifood, 2014).

TFGA has also reviewed a number of other industry programs, workforce development plans, skills needs analyses, and submissions from other state and national farming organisations, such as the *National Agriculture Workforce Development Plan* (National Farmers Federation, June 2014); the *National Blueprint for Agriculture*; and the 2015 *Environmental Scan of the Agrifood Industry* (Agrifood Skills).

There are a number of definitions of agribusiness investigated for the purposes of this Scan. The Oxford Dictionary defines agribusiness as “agriculture conducted on strictly commercial principles” or “an organisation engaged in agribusiness” and Websters Dictionary says agribusiness is “an industry engaged in the producing operations of a farm, the manufacture and distribution of farm equipment and supplies, and the processing, storage, and distribution of farm commodities”. For the scope of this Scan the definition of agribusiness, is defined as: farming enterprises that include the whole of chain, but excluding retailers.

The Agriskills Project is not dependent on the completion of any other project but is subject to the policy constraints and limitations that may be incorporated as part of the Government’s Agrivision 2050 policy and the objectives, outputs and outcomes of the Agriskills Project Deed of Grant. The Agriskills Project, in particular, is required to support the alignment of the *Training and Workforce Development Act 2013*; and the *Ministerial Priorities for Training and Workforce Development 2014-2015* (this is the current version at the time of this Scan, with the 2015-16 still under development and expected to be publicly launched in early 2016.)

Whilst primarily directed at technical and further education (TAFE) level skills and training, this Scan also touches on the challenges and issues identified in the education space, particularly at a High School level. The overall workforce development findings documented in this Scan are limited by the funding allocated by the Government that is contracted until the 30th of June 2017.

CONTEXT AND ENVIRONMENT

Primary Industries in Tasmania

The landscape

Tasmanian primary producers farm and manage 18 901 square kilometres of the 68,401 square kilometres within the state; and 32 643 square kilometres of nature conservation, which is protected as “minimal use” area, comprising of 48% of the state’s land area in total. ABARES data shows that Tasmania has a population of 495,354 (ABS 2011).

Food production in Tasmania has major points of difference, even to that of the mainland states. Two examples are the indefinite moratorium the Tasmanian Government has placed on the commercial release into the environment of Genetically Modified Organisms (GMO) crops; and the ban on Hormones Growth Promotants (HGPs), used in some other states and territories to accelerate the weight gain of cattle.

The primary industries sector in Tasmania goes beyond the production of just food, fibre and beverages. There are a number of other industries, like the equine industries (racing and horse breeding), and emerging industries, such as energy (ethanol production) and seed production. Tasmania is a net exporter of food-based agricultural and aquacultural production, largely due to its reputation for producing high quality food, safely and reliably. However, given that Tasmania operates in the international food and fibre business, these points of difference may no longer a strategic advantage for the state.

The geographic isolation of Tasmania enhances its ability to produce environmentally sustainable food, which is enhanced by strong biosecurity measures. Tasmania is well connected through transport logistics to supply world markets with fresh produce, however the cost of freight across Bass Strait is often prohibitive. The Hobart International Airport is in the process of undergoing significant re-developments that will potentially open up new markets for primary producers in Tasmania.

Climate

Tasmania has some of the most productive and healthy soils in the world and has an international reputation for producing the cleanest and greenest food and fibre. The mild climate, good quality water, four distinct seasons, and isolation make Tasmania an ideal place for producing pure, high quality products for world markets.

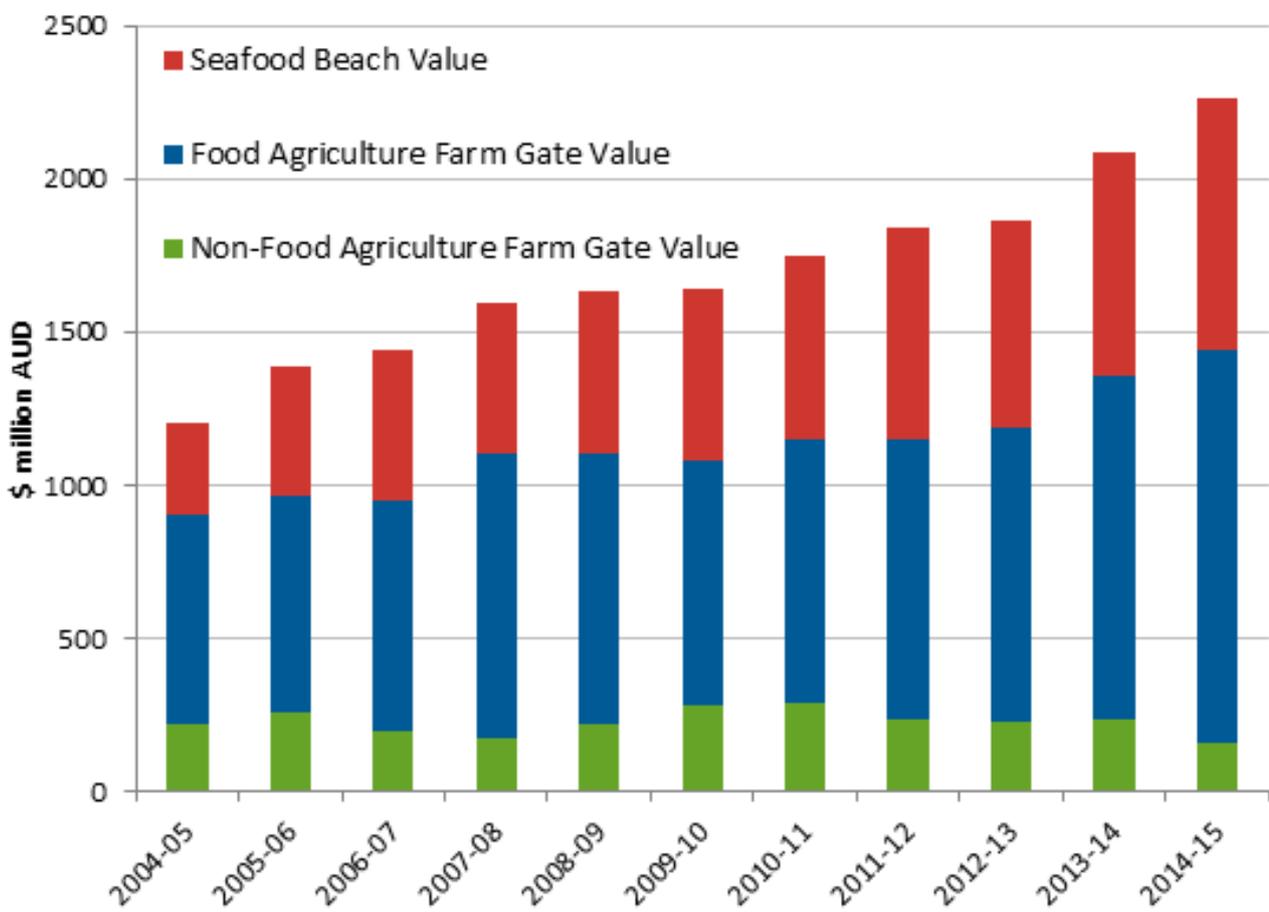
Economic contribution

The Gross Value Agricultural Production (GVAP) in Tasmania grew 6% in 2014-15 to \$1.438 billion. The top five economic contributors to Tasmania in 2014-15 were:

1. Milk (\$442.38 million)
2. Cattle and calves (\$247.2 million)
3. Potatoes (\$160.81 million)
4. Wool (\$91.30 million)
5. Sheep and lambs (\$87.71 million)

Brand Tasmania notes that when primary production is combined with dependent downstream processing, it provides around a third of the state’s Gross Product, about a third of the employment and a quarter of all overseas exports.

FIGURE 1: TASMANIAN AGRICULTURE AND SEAFOOD PRODUCTION GROSS VALUE 2004-2015



SOURCE: Department of Primary Industries, Park, Water and Environment 2016.

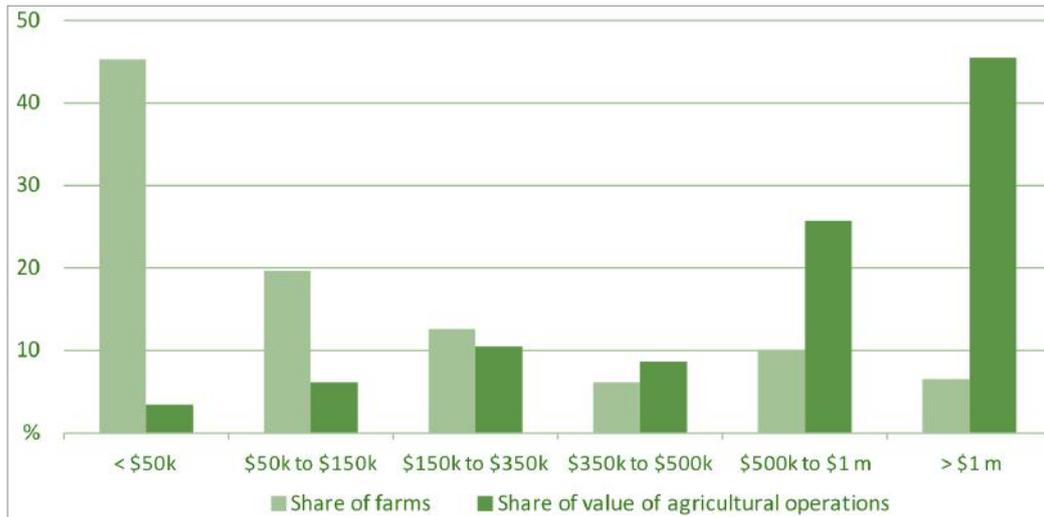
While not directly reflected on the above figures, it should be acknowledged that Tasmania leads the world in the production of pharmaceuticals (poppies). Poppy Growers Tasmania estimates the economic contribution from poppies is worth \$90 million per annum to the state.

The State Government has an aspirational vision to grow the GVAP of Primary Industries to \$10 billion by the year 2050.

Financial performance

ABARES 2012-13, reveals that 45% of Tasmanian primary producers had an Estimated Value of Agricultural Operations (EVAO) of less than \$50k. It also shows that 23% of the state's primary producers had an EVAO of \$350k, which accounted for an estimated 80% of the total EVAO in the state. Approximately 6% of Tasmanian farms had an EVAO greater than \$1 million, which is in line with the national ABS data that indicates that 7,700 (or 6%) Australian farms had an EVAO in excess of \$1 million.

FIGURE 2: DISTRIBUTION OF FARMS BY ESTIMATED VALUE OF AGRICULTURAL OPERATIONS, TASMANIA, 2012-13



SOURCE: ABARES 2012-13

2013-14 data from ABS reveals that approximately 40% of farms in Tasmania had an EVAO of less than \$50 000 (Figure 3), which equated for only 3% of the total value of agricultural operations during that financial year. When compared to the ABS data from 2012-13 this represents a 5% decrease for the corresponding period. Farms that had an EVAO of \$350k or more accounted 81% of the EVAO for Tasmania during the 2013-14 financial year, representing a 1% decrease for the 2012-13 period.

FIGURE 3: DISTRIBUTION OF FARMS BY ESTIMATED VALUE OF AGRICULTURAL OPERATIONS, TASMANIA, 2013-14



SOURCE: ABARES 2013-14

Production in Tasmania

Primary production in Tasmania is diverse and intensive. The table below offers a snapshot of the ABARES 2014 data. The data indicates the farming enterprises operating in the state. If a farming business operates more than one enterprise, the data represents the enterprise generating the greatest value of production for each business:

TABLE 1: NUMBER OF FARMS, BY INDUSTRY CLASSIFICATION, 2013–14

Industry Classification	Tasmania		Australia	
	no.	%	no.	%
Beef Cattle Farming (Specialised)	1 026	30.7	36 730	32.4
Sheep Farming (Specialised)	664	19.87	13 233	11.7
Other Crop Growing (nec)	398	11.9	5 491	4.8
Dairy Cattle Farming	370	11.06	7 171	6.3
Vegetable Growing (Outdoors)	240	7.2	3 089	2.7
Sheep-Beef Cattle Farming	170	5.08	5 448	4.8
Grape Growing	88	2.63	4 242	3.7
Horse Farming	73	2.2	3 530	3.1
Stone Fruit Growing	49	1.47	600	0.5
Apple and Pear Growing	45	1.34	607	0.5
Berry Fruit Growing	40	1.2	387	0.3
Total agriculture	3 341	100	113 533	100

SOURCE: ABARES 2016

ABS (2012–13) indicates that there were 3,935 farms operating in Tasmania during that period. As indicated by Table 1, during the 2013-14 financial year the number of farms operating decreased by 594 to 3,341.

Business structure

Traditionally, the most common business structure used by Tasmanian primary producers has been sole trader or partnerships. While this may still be appropriate for small-scale producers, the nature of the business environment is slowly changing from post-war business structures to one that is increasingly attracting attention from corporate companies. There are a number of drivers for this change, such as the development of the large-scale irrigation schemes where the cost has been shared between private and corporate sectors.

Deloitte's Positioning for Prosperity (2014) Report shows most Australian farms are family-owned, with the large majority of broad-acre and dairy farms operated by owner-managers. In TFGA's experience, there are a number of other factors that influence the business structures for primary producers in this State. These include legislation, family circumstances, the level of business growth and market opportunities. As individual enterprises look to achieve scale, there is a growing trend of farmers looking to acquire other smaller players and/or seek opportunities to collaborate with other enterprises to achieve production efficiencies.

As the older generation are looking to restructure their investments out of rural real estate and into superannuation, farming families need to consider business continuity for their rural enterprise as separate matter. This has also driven the need to change business structures to meet future farming needs. The Deloitte report further points out that the retirement of many Australian farmers is pending (also see industry age profile). This won't just produce skill shortages on a huge scale, it will require many businesses to change hands. Deloitte estimates that these changes could potentially cost up to \$400 billion to fund these ownership transitions.

Water infrastructure

Tasmanian Irrigation (TI) has been at the forefront of developing the water infrastructure, from feasibility to management of the Schemes. Water development is now opening up new and exciting opportunities for primary producers to diversify by changing their enterprise mix or developing new industries, particularly in traditional dry land areas of the state.

The potential for new enterprise is substantial. However, the full potential will not be obvious in some regions for many seasons to come. This highlights that farmers are becoming more business savvy as they consider changes to their enterprise mix. The water development projects have also provided farmers with an opportunity to mitigate risk during the unseasonal dry periods experienced during recent seasons.

Table 2 reflects the current projects, ranging from investigating the feasibility of future schemes to those in operation:

TABLE 2: TASMANIAN IRRIGATION SCHEMES

Scheme Name	Volume (ML)	Irrigatable area (ha)	Status	Cost/ML
Cressy Longford			Operational	
Dial Blythe	2,855	8,630	Operational	\$1,200
Duck	5,000	26,890	Under Development	
Great Forester	1,980	1,800	Operational	
Greater Meander				
Kindred North Motton	2,500	8,483	Operational	
Lower South Esk	5,298	15,241	Operational	
Midlands	38,500	55,484	Operational	
North Esk	2,850		Under Development	
Sassafras Wesley Vale	5,460	10,650	Operational	
Scottsdale	8,600	17,366	Under Development	
Sorell	3,000	5,7800	Operational	\$2,700
South East Stage 1	2,650	3,950		\$2,700
South East Stage 2	1,975	2,950		\$2,700
Southern Highlands	7,215	800	Under Development	
Swan Valley	2,000		Under Development	
Upper Ringarooma	5,700	10,177	Under Construction	
Whitemore	5,500	12,000	Operational	
Winnaleah				

SOURCE: www.tasmanianirrigation.com.au 2012 data.

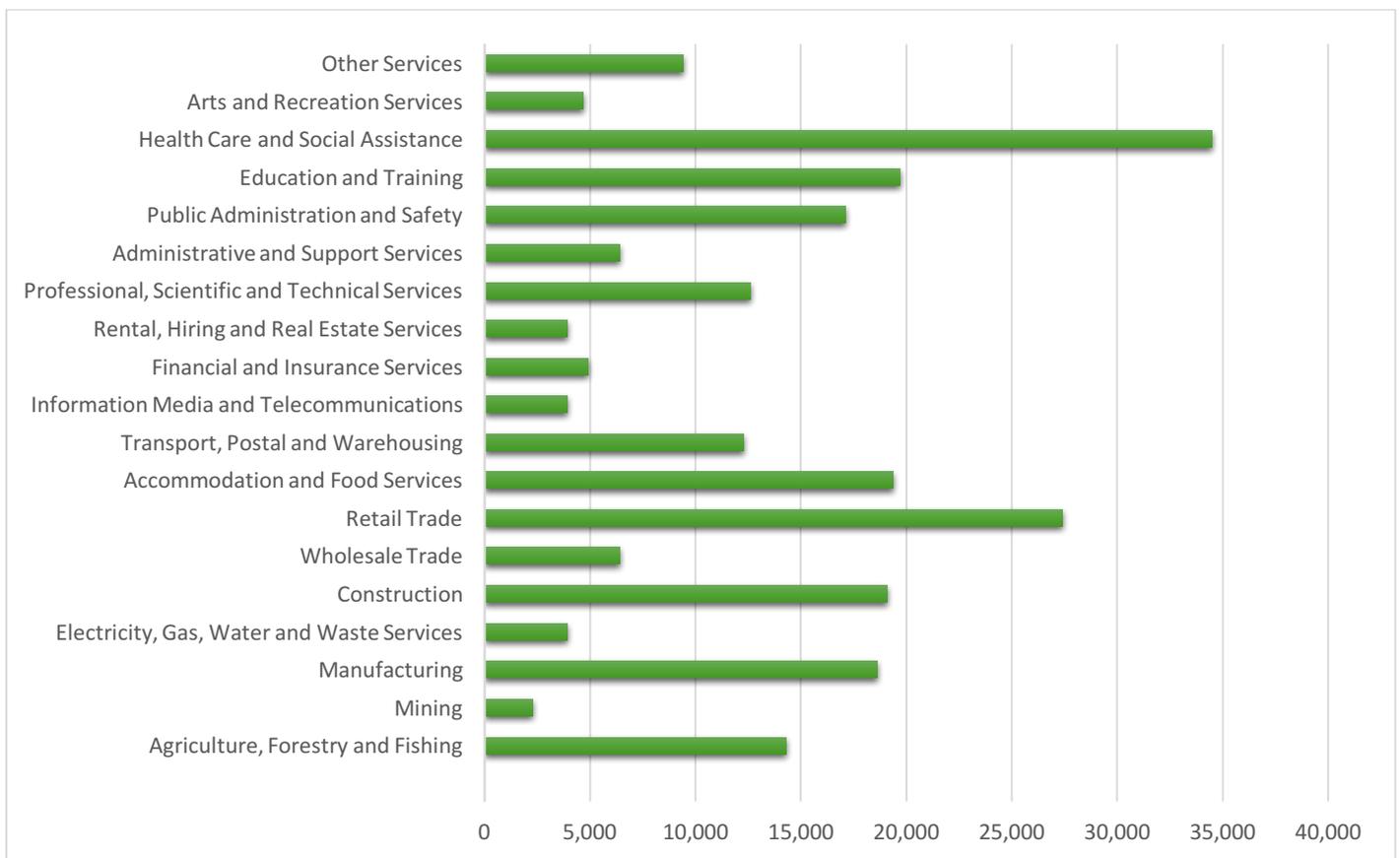
CURRENT WORKFORCE PROFILE

Labour Market

Labour force

The total workforce in Tasmania comprises 240,800 (ABS Labour Force Survey, 2015), with 14,300 employed in the Agriculture, Fisheries and Forestry sector in the state. This equates to approximately 6% (5.93%) of the total workforce. In percentage terms, the Tasmania primary industries sector employs approximately 2% of the national workforce; and 4% of people employed in the sector in Australia.

FIGURE 4: TASMANIAN EMPLOYMENT PROFILE BY INDUSTRY, NOVEMBER 2015.



SOURCE: ABS Labour Force Survey, 2015, four quarter average.

The *Blueprint for Australian Agriculture 2013-2020*, facilitated by the National Farmers Federation (NFF), predicts that agriculture needs to find some 90,000 people in the short term to build the Australian farming sector back to pre-drought levels. The report estimates that a further 15,000 people per annum are needed to replace the workforce exiting the industry.

There is still work to be done across the primary industries sectors to identify the workforce numbers required to support industry growth in Tasmania. The Tasmanian dairy sector is one of the few industries who have forecast their future workforce needs through a workforce development consultant. The consultant reported that the dairy sector in Tasmania currently employs around 2700 people, both on-farm and in-factory; and that the Circular Head/Waratah Wynyard region alone, which represents around half of the milk production area for Tasmania, would need to find another 600 jobs at the farmgate level to achieve the industry growth target, as projected by DairyTas. If this was achieved, it would increase milk production by 350 million litres in the next five years.

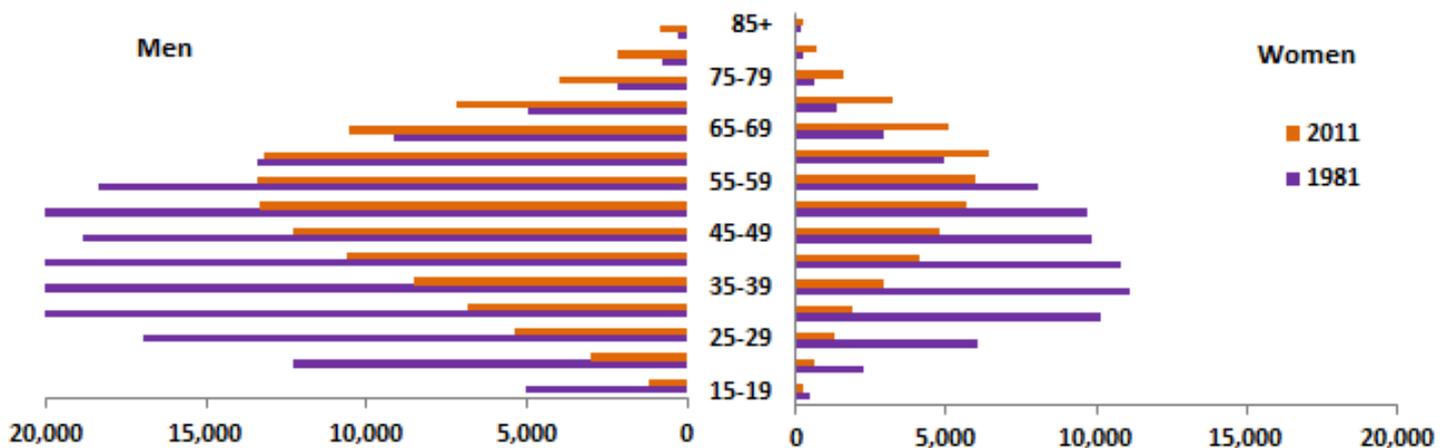
Industry age profile

Generational drivers, including age demographics, will be an important consideration for the industry to improve the participation and engagement in training and skill development activities required to address the industry skills needs. This knowledge could also improve recruitment, attraction, retention and development strategies that could yield the workforce participation and productivity required to achieve the ten-fold growth of the sector; and improve the ability of the sector to predict the supply and demand of labour.

The median age of the Australian farmer is 52 (ABS 2012), which is 12 years above the median of 40 in other Australian professions. The ABS *Australian Social Trends Dec 2012 Report*, highlights that almost a quarter (23%) of farmers were aged 65 years or over in 2011. This demographic represented just 3% in other occupations. The ABS suggestion that the farming sector may be more likely to work beyond the traditional retirement age may be due to the decline in younger generations taking over family farms.

ABS data also indicates that between the years of 1981 and 2011, the median age of farmers increased by nine years, while the median age of workers from industries (not associated with agriculture) increased by only six years. During the corresponding period farmers aged 55 years and over increased from 26% to 47%; and farmers aged less than 35 years fell from 28% to just 13%.

FIGURE 5: AGE PROFILES OF FARMERS - 1981 AND 2011



Source: ABS Census of Population and Housing, 2012.

More recent data produced by ABS (June 2015) indicates the average age of farmers in Australia in management positions is 57, of which Tasmania is in line with national data. ABS also looked at the average number of years that respondents had been involved in farming: the national average was 33.4 years, Tasmania was the highest at 34.6 years, as illustrated in Figure 5.

FIGURE 6: FARM MANAGEMENT, YEAR ENDED 30 JUNE 2014



Attracting a new generation

As the average age of farmers in Australia continues to grow, the need to attract younger workers increases. It is predicted that Gen Ys, born 1980 to mid-1990s, will make up 42% of the future workforce by 2020. Industry trends suggest that one-in-three Gen Ys currently work casually or part time. Those Gen Ys who are engaged in full-time employment stay an average of two years in a role, according to *Agricultural Appointments*.

Agricultural Appointments (2015) explains that throughout Gen Ys' lifetime it is predicted that they will work for 17 employers while striving for career progression and work-life balance. This generation desires an inclusive employment culture with a varied professional role.

Improving the understanding of the generational key drivers and motivators will assist RTOs to provide a more strategic approach to the supply and delivery of training, and assist employers to attract and retain a skilled workforce. McCrindle (2012) (Table 3) demonstrates how generations are defined socially. Despite being a few years old now it provides an insight into the differences between things like communication and learning styles of each generation:

TABLE 3: GENERATIONS DEFINED SOCIALLY

	BUILDERS 1925-1945	BABY BOOMERS 1946-1964	GENERATION X 1965-1979	GENERATION Y 1980-1994	GENERATION Z 1995-2010
PMs	Robert Menzies John Curtin	Gough Whitlam Malcolm Fraser	Bob Hawke Paul Keating	John Howard Kevin Rudd	Julia Gillard Tony Abbott
Iconic Technology	Radio (Wireless) Motor Vehicle Aircraft	TV (56) Cassette (62) Transistor Radio (55)	VCR (76) Walkman (79) IBM PC (81)	Internet Email SMS DVD (95) Playstation Xbox iPad	MacBook iPad Google Facebook Twitter Wii PS3 Android
Music	Jazz Swing Glen Miller Frank Sinatra	Elvis Beatles Rolling Stones Johnny O'Keefe	INXS Nirvana Madonna Midnight Oil	Eminem Britney Spears Puff Daddy Jennifer Lopez	Kanye West Rhianna Justin Bieber Taylor Swift
TV & Movies	Gone With the Wind Clark Gable Advent of TV	Easy Rider The Graduate Colour TV	ET Hey Hey It's Saturday MTV	Titanic Reality TV Pay TV	Avatar 3D Movies Smart TV
Popular Culture	Flare Jeans Roller Skates Mickey Mouse (28)	Roller Blades Mini Skirts Barbie Frisbees (59)	Body Piercing Hypercolor Torn Jeans	Baseball Caps Men's Cosmetics Havaianas	Skinny Jeans V-necks RipSticks
Social Markers/ Landmark Events	Great Depression (30s) Communism World War II (39-45)	Decimal Currency (66) Neil Armstrong (69) Vietnam War (65-73) Cyclone Tracey (74) National Anthem (74)	Challenger Explodes (86) Halley's Comet (86) Stock Market Crash (87) Berlin Wall (89) Newcastle Earthquake (89)	Thredbo Disaster (97) Columbine Shooting (99) New Millennium September 11 Bali Bombings	Iraq/Afghanistan War Asian Tsunami (04) GFC (08) WikiLeaks Arab Spring (11)
Influencers	Authority Officials	Evidential Experts	Pragmatic Practitioners	Experiential Peers	User-generated Forums
Training Focus	Traditional On-the-job Top-down	Technical Data Evidence	Practical Case studies Application	Emotional Stories Participative	Multi-modal eLearning Interactive
Learning Format	Formal Instructive	Relaxed Structured	Spontaneous Interactive	Multi-sensory Visual	Student-centric Kinesthetic
Learning Environment	Military style Didactic & disciplined	Classroom style Quiet atmosphere	Round-table style Relaxed ambience	Café-style Music & Multi-modal	Lounge room style Multi stimulus
Sales & Marketing	Print & Radio Persuasive	Mass/traditional media Above-the-line	Direct/Targeted media Below-the-line	Viral/Electronic media Through friends	Interactive campaigns Positive brand association
Purchase Influences	Brand emergence Telling	Brand-loyal Authorities	Brand switchers Experts	No brand loyalty Friends	Brand evangelism Trends
Financial Values	Long-term saving Cash No credit	Long-term needs Cash Credit	Medium-term goals Credit savvy Life-stage debt	Short-term wants Credit dependent Life-style debt	Impulse purchases e-stores Life-long debt
Ideal Leaders	Authoritarian Commanders	Commanding Thinkers	Co-ordination Doers	Empowering Collaborators	Inspiring Co-creators

SOURCE: McCrindle Research 2012

Educational attainment

The *National Agriculture Workforce Development Plan (June 2014)*, undertaken by the National Agribusiness Education, Skills and Labour Taskforce (NEST), indicates that the industry has low education attainment levels. Between 60-64% of farmers, owner operators, or family members do not possess any post-high school qualifications. The NEST report also points out that approximately 26.3% of the total Australian workforce at management level is degree qualified. However, farm managers who are degree qualified account for less than 10% (approximately 8% hold diploma, advanced diploma or bachelor degree; and only 2% hold post-grad qualifications).

Despite the low industry participation in formal education, ABS (2012) indicates that as the business of primary production increases in complexity, a growing number of farmers are seeing themselves as being “in the business of farming” rather than “just farmers”. This positive development has seen a growth in the number of farmers engaging in formal education. ABS (2012) further implies that this trend towards formal education is reflective of all professions. The increase in the farming sector has exceeded that of other professions. However, the farming occupations were still the least likely to hold non-school qualifications.

According to the National Centre of Vocational Education Research (NCVER), national trainee and apprentice numbers have been in a gradual decline since 2003 across all industry professions. This Scan has identified the need to investigate if the decline in trainee and apprentices over the past decade has contributed to the decline in university enrolments. Improving the culture of learning in the primary industries sector, more broadly, may increase the perceived value of VET and tertiary education within the sector.

The *Food, Farming and Our Future* report (2015), from the Chartered Accountants Australia and New Zealand, points out that the resources available to produce the food required to feed the predicted growth in population are predetermined, such as land, water and nutrients. Farming smarter through new and/or improved technologies to produce more food from less land, and improved workforce development practices (and culture) will be a significant factor in attracting people to the industry. The intricacy of primary production, developments and advancements in science, technology and innovation, supports the industry voice to further improve education levels of primary producers.

Employment

ABS data from June 2014 shows that there were 6,004 primary industries, fishing and forestry businesses operational at the beginning of that financial year, and that number had declined by 157 to 5,847 by the end of the year. Previous data collected by DPIPWE in 2011, indicated that there were 6,984 operational businesses, which had declined by 675 during the 2011 period.

ABS Labour Force Survey, November 2015 (table 4), indicates that Agriculture, Forestry and Fishing is a significant employer in Tasmania. The state has a higher percentage (5.9%) of people employed in the Agriculture, Forestry and Fishing sectors than any other state or territory in Australia, which has a national average of 2.6%. In Tasmania, the total sector workforce is comprised of 74.13% male and 25.87% female.

Agriculture, Forestry and Fishing in Australia employs approximately 311,400 persons (ABS 2015). This figure is expected to decrease to approximately 296,200 by November 2020, representing a 3.1% decrease over that period. While this is a reflection of the long-term decline in the sector, it may also show an appetite for investment in technology to replace human labour and reflects the ongoing dry conditions currently experienced in much of Northern Australia.

TABLE 5: LABOUR FORCE SURVEY, NOVEMBER 2015

	Total	Full-Time	Part-Time	Male	Female	Distribution (%)
New South Wales	80,900	61,700	19,200	55,200	25,700	2.2
Victoria	88,900	61,100	27,800	57,500	31,300	3.0
Queensland	58,400	42,300	16,100	37,400	20,900	2.5
South Australia	40,100	30,000	10,100	28,300	11,800	5.0
Western Australia	27,200	20,000	7,300	20,000	7,200	2.0
Tasmania	14,300	10,300	4,000	10,600	3,700	5.9
Northern Territory	1,000	900	100	800	200	0.8
Australian Capital Territory	700	500	200	500	200	0.3
Australia	311,400	226,800	84,600	210,400	101,100	2.6

SOURCE: ABS Labour Force Survey, four-quarter average, November 2015

TABLE 6: TASMANIAN EMPLOYMENT BY INDUSTRY, NOVEMBER 2015

Industry	Total	Full Time	Part Time	Male	Female	Distribution %
Agriculture, Forestry and Fishing	14,300	10,300	4,000	10,600	3,700	5.9
Mining	2,300	2,300	0	2,100	200	1.0
Manufacturing	18,600	15,400	3,200	14,300	4,200	7.7
Electricity, Gas, Water and Waste Services	3,900	3,500	400	3,600	300	1.6
Construction	19,100	15,900	3,200	17,000	2,100	7.9
Wholesale Trade	6,400	5,200	1,200	5,100	1,300	2.7
Retail Trade	27,400	12,700	14,700	12,600	14,800	11.4
Accommodation and Food Services	19,400	7,500	11,900	7,600	11,800	8.1
Transport, Postal and Warehousing	12,300	9,700	2,500	9,800	2,500	5.1
Information Media and Telecommunications	3,900	2,900	1,000	2,100	1,800	1.6
Financial and Insurance Services	4,900	3,900	1,000	1,800	3,200	2.0
Rental, Hiring and Real Estate Services	3,900	2,900	1,100	1,800	2,200	1.6
Professional, Scientific and Technical Services	12,600	8,500	4,000	7,300	5,300	5.2
Administrative and Support Services	6,400	3,200	3,200	2,600	3,900	2.7
Public Administration and Safety	17,100	13,500	3,600	9,000	8,100	7.1
Education and Training	19,700	10,900	8,700	5,600	14,100	8.2
Health Care and Social Assistance	34,500	17,800	16,700	7,900	26,700	14.3
Arts and Recreation Services	4,700	2,500	2,200	2,900	1,800	2.0
Other Services	9,400	6,100	3,300	4,900	4,500	3.9

SOURCE: ABS Labour Force Survey, four-quarter average, November 2015

Workforce Development Landscape

The National Rural Advisory Council (NRAC) (May 2013) *Report on Workforce Planning Capabilities of Agricultural Employers* found that most agricultural employers undertaking workforce planning had developed those skills through broader business management capabilities, rather than dedicated human resource (HR) management training.

In Tasmania there is very little verification of engagement with workforce planning, other than the planning around seasonal activities like shearing or potato harvesting. It is one view that employers who manage enterprises with an EVAO greater than \$500K have a better understanding of workforce planning in a broader management context, however, very few have a formal workforce development plan. In TFGA's experience, through interaction with its membership, is estimated that less than 1% of employers would be engaged in explicit workforce development or planning activities at an enterprise level. The industry would benefit from developing a culture around workforce planning and development that promotes and enhances the development of its' workforce. Further qualitative research into the industry's capacity and capability to do this would increase the use of skills and knowledge and enterprise productivity.

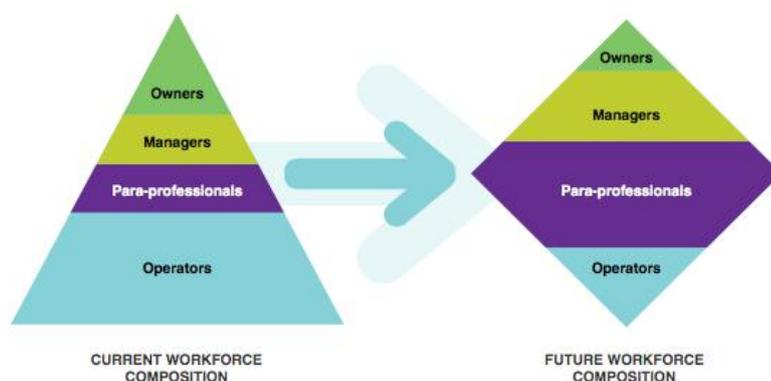
Corporate-owned businesses were more likely to employ a dedicated HR manager, or have formal policies and procedures in place. Building better human resource capacity is essential for improving business performance, including the resilience of the industry to adapt and respond to change. Rapid changes in technology can mean that it is difficult to predict the jobs required even 10 years from now. This places a greater emphasis on skilling the current and future workforce to be adaptable and resilient to change, to think on their feet, to be competent communicators and to be capable at managing people.

The Environmental Scan 2015, conducted by AgriFood Skills Australia, suggests the composition of the future workforce will look more like a diamond, rather than the triangle structure experienced currently, as per figure 9. In addition, the Environmental Scan indicates that in order improve the competitiveness, profitability and sustainability the industry needs to focus on five key areas:

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

The Agriskills Project plan for 2015-16, which was largely informed by *The Agricultural Skills Plan 2011-2014*, addresses the issues identified in the *AgriFood Environmental Scan*. Progressing an industry workforce development strategy with a similar nucleus is seen as important in leading to a workforce across the industry that is resilient, appropriately skilled, able and motivated to contribute to the growth and development of a competitive, productive and sustainable primary industry sector.

FIGURE 7: WORKFORCE COMPOSITION



SOURCE: AgriFood Skills Australia, 2015

Identified workforce skills requirements

The *Agriculture Skills Plan 2011-2014* identifies four areas where the sector requires greater emphasis on skills and workforce requirements:

Market intelligence

Tasmanian producers and processors have clearly identified the need to increase and develop their skills in getting closer to, and better understanding new buyers and consumers, and to convert market intelligence into new product and processes.

Business management skills

- Market intelligence and consumer trends
- Innovation (engaging with research, development and extension)
- Business planning (future strategy, budgets and investment priorities)
- Market development and product design
- Financial management
- Human resources (HR) management
- Succession planning
- Marketing and supply chain processes
- Technology.

Technical (professional)

- Rural sociology
- People skills
- Farm business management including supply and value chains
- Information technology, precision equipment
- Agronomy
- Irrigation technology and engineering
- Quality assurance
- Marketing and product development
- Natural resource and other environmental management skills
- Project management and development
- Logistics
- Research, development and extension
- Financial, economic and investment skills
- Policy and analysis skills.

The need for “employability skills” was also raised as important, with the following components identified for professional technical positions:

- Team work (including ability to work in multi-disciplinary teams)
- Policy and governance in the agriculture industry
- Communication skills
- People skills
- Innovation
- Uptake of new technology.

Technical (operational)

- Occupational health and safety (OH&S)
- First aid
- All terrain vehicle (ATV)
- Chainsaw
- Computer and technology skills
- Basic tractor
- Basic chemical handling
- Forklift
- Compliance (OH&S, Quality Assurance, Environmental, and understanding of other relevant standards)

Workforce supply

As the industry's dependence on non-family labour is increasing, a greater emphasis is required on improving employment practices, which may potentially lead the industry to become an "industry of choice". The National Rural Advisory Council (NRAC) report on *Workforce Planning Capabilities of Agricultural Employers* suggests that as former mining employees return to agriculture they may demand a change in thinking around more formalised approaches to workforce planning and development and WHS compliance from the sector.

Historically in Tasmania, the larger percentage of farms have been family-owned and operated, only relying on external labour sources for peak season demands for activities like shearing, pruning or harvesting. In TFGA's experience, the workforce dynamics are changing, with many farmers engaging fee-for-service professionals to provide a wider range of advice to their enterprise, such as agronomic and business management consultants. Further research into how farmers are utilising external consultants will provide a deeper understanding of the workforce requirements in the Tasmanian primary industry sectors.

The feedback from industry indicates that employers, particularly in production horticulture, are using a backpacker and migrant workforce, such as *Working Holiday Maker Visa (417)* or *Temporary Skilled Visa (457)* or *Seasonal Worker* programs to fill unskilled labour requirements. While the turnover and the associated induction costs are high - and some issues, such as language barriers exist - producers valued working holiday makers as a labour source, particularly when combined with local labour to meet their seasonal workforce needs.

As of July 2016, working holiday makers will be required to pay tax at 32.5 cents in the dollar from their first dollar earned, instead of after their first \$18,200 earned. At the time of this Scan, the Federal Government was conducting a cross-departmental review of the proposed tax after concerns were raised of potential seasonal skills shortages during peak periods if backpackers were deterred from travelling to Australia for working holidays, as a consequence of the tax. The introduction of the Tax has been put on hold.

Industry workforce development plans indicate that current workforce demand, both nationally and in Tasmania, is for mid-management roles, from Assistant Manager and above. Agricultural Appointments conducted a review of agribusiness salaries, *2015 Salary and Trend Report*, looking at the 10-year period from 1995 to 2015. That data shows growth in agribusiness salaries has been substantially slower to rise than average salaries in other industries. The same report illustrates that farm management salaries were the worst performing over the 10-year period, only increasing by 1.8% per annum. The highest annual wage increase was for technical roles, such as quality assurance managers (5.33%), sales representatives (5.12%) and agronomists (7.50%). The industry would benefit from further investigation into salaries and trends specifically relating to Tasmania. (Also see how employers find labour).

While much of the research indicates that salary is not the sole consideration for young people to contemplate a career in the industry, it is certainly an important one. Understanding remuneration trends and other key factors that assist in attracting people to the industry to stay market competitive, will be vital to attracting young people into the sector.

How employers find labour

There is a perceived need in the industry for employers to have the know-how to “sell” the jobs on offer. For example, the *Positioning for Prosperity* report from Deloitte, suggests that industry job advertisements for rural roles can lack an air of professionalism. By improving the quality of job advertisements, Deloitte suggests that the industry could improve the quality of applications, potentially attracting a more diverse range of workforce.

The production horticulture and dairy sectors have both highlighted the preference of their employers to use word-of-mouth to find employees. Anecdotal evidence from the industry, more broadly, suggests that 70-75% employers in the primary industry sectors find employees through word-of-mouth rather than public advertisements in newspapers or online job sites, such as www.seek.com.au, www.careerone.com.au, www.gumtree.com or www.jobsearch.gov.au/job/search/harvest. Employers perceive these sites as less cost effective.

Historically, industry employers have utilised various methods to attract their workforce. Anecdotally, employers looking to recruit seasonal staff have had a strong preference for using less formal means - such as word-of-mouth, including digital forms such as social media - to source a workforce. The low number of job advertisements published online and in regional newspapers, in comparison to other industries, may not have truly reflected the sector’s appetite to attract a workforce. This may have led to a distorted view regarding the supply of labour, the need for workforce planning and increased investment in skills.

The Commonwealth Register of Institutions and Courses for Overseas Students (CRICOS) is an Australian Government website that lists all the national education providers that offer courses to international students on student visas. Primary producers who utilise backpacker labour have reported to this scan that agriculture and/or primary industries courses at a VET level need to be updated to better reflect the industry offering available in Tasmania. This issue is seen as relevant as overseas students who are interested in studying agriculture have been a good source of short term labour for Tasmanian primary producers.

Deloitte implies that the breadth of skills, experience, education and business acumen required to undertake jobs within the agricultural sector extends not just to on-farm workers, but across the entire value chain and rural communities, and needs to be better promoted. For example, when agricultural positions offer on-site family-friendly accommodation, fuel, meat, vehicle, seasonal bonus, as well as base salary, the total package for agricultural jobs become more appealing, especially when this is combined with other lifestyle benefits.

The Deloitte report also suggests that being innovative in the type of rewards offered within remuneration packages was an important consideration. TFGA suggests that some examples of innovative rewards could be profit sharing during good seasons, rewards for reaching or exceeding key performance indicators (KPIs), investment opportunities and share farming opportunities. When combined with the improved use of good quality position descriptions, this could also benefit the attraction and retention of skilled workers into the industry.

The use of employment agencies or resources, such as the National Harvest Trail, is becoming more common in the industry, particularly in the production horticulture sector where producers are looking for a large workforce to undertake seasonal roles such as picking, packing, and pruning. Conversely, it is not a common practice for primary producers to use recruitment agencies to look for skilled roles like leading hands, overseers and managers. In TFGA’s experience, at this level, employment and recruitment agencies would be better placed to provide advice about opportunities and career paths available in the industry if more in-depth consultation and engagement was fostered. Building the capacity of employment agencies is seen as important for attracting and retaining a future workforce for the primary industry sectors in Tasmania.

Challenges in attracting a workforce

- Competition from mining companies in the past has provided challenges for the sector because of the close correlation in the practical skills required in farming. The average mining industry salary equals \$120,739, compared to the average agricultural salary of \$81,049 (Seek 2014 Annual Salary Review), largely because farmgate margins have not allowed farmers to compete with mining salaries. While higher levels of pay can influence employees, it does not guarantee retention. Mining has been highly attractive in the past, however, has experienced high turnover, largely due to the isolation and fly-in-fly-out (FIFO) being difficult on families.
- A large number of industry sectors have identified, through their workforce development or skills plans, that industry employers are challenged in providing current HR employment practices, despite their best intent. As consumers are demanding food that is produced in an ethical manner, some supermarket chains are now requiring suppliers to provide evidence of proper employment practices such as correct pay rates, particularly after media reports of exploited foreign workers in the horticulture sectors on the mainland. In TFGA's experience, it is evident that those employers who have sound employment practices have little trouble attracting a workforce through reputation.
- *The Industry Skills Plan: Agriculture October 2011 – June 2014* identifies the need to improve the perception of agriculture as a career option; and develop and promote the career pathways for increasing the diversity of the workforce. The poor image of agriculture has made it difficult to attract a skilled workforce to the industry and it has also deterred its potential workforce to study primary industry based subjects, due to a perceived lack of career progression opportunities. Many of the national industry stakeholders, including the education sector, have identified that there is a significant knowledge deficit among career advisors and/or teachers regarding the career prospects. This was perceived to be because they had limited exposure to the industry, which made it difficult to advise students on suggested pathways. Additionally, the quality of career information available was found to be disjointed and extremely hard to resource.
- The industry needs to promote its self as an educated profession that responsibly manage environmental resources, or risk being seen as uneducated and inefficient at managing water and land resources. Agriculture is perceived to be an industry that is prone to disasters and heavily reliant on government assistance. Farmers providing media commentary about high debt levels, droughts and floods, including extremist campaigns from animal activists, may have been perceived as negative and left some young people asking, "why would you get involved in agriculture?" Advances in technology have significantly increased production efficiency and output, particularly around water management.
- There continues to be significant opportunities within the sector for young people to enter the industry, however, the age profile of industry has potentially provided a false perception about the prospects for young people or career changers. It is worth noting that there was a general speculation from industry around whether the ABS statistics were a true reflection of the average age of the industry, because the data is derived from who owns the farm at the time of the survey i.e. succession may already be in play and this may be distorting the perception.
- The seasonality of Tasmanian enterprises can make it difficult for businesses to employ full-time staff. The high turnover of casual seasonal staff puts pressure on businesses to re-train staff, and may also give the wrong impression about long-term career prospects in the industry. This challenge presents an opportunity for employers to investigate a regional employment model using seasonal enterprise demands to create full-time opportunities, including trainees and apprentices, by using host employers.
- The proximity of regional work opportunities has been a barrier in attracting a workforce, particularly those with limited access to essential services such as health services and supermarkets that make a region liveable. Regional infrastructure; such as affordable telecommunication, energy, NBN and transportation; and proximity to primary and secondary schools are also significant barriers in attracting a workforce.

Challenges in retaining a workforce (employer)

- There needs to be a greater uptake of formal HR practices or processes for the industry, similar to those seen in corporate business, such as grievance and safe work policies and procedures etc. Some employers reported to this scan of the difficulty in managing or disciplining dysfunctional staff on performance because of poor quality or non-existent employment practices.
- Some employers claim the industrial relations (IR) system is complex and difficult to navigate and interpret. As a result, employees may not be being paid under the right award, and therefore, not receiving the appropriate documentation relating to pay, annual leave, sick leave, long service leave or superannuation entitlements, and this is making it difficult for employers to retain employees.
- The low participation in workforce development and training in the industry is not favourable for attracting a workforce. Many employers see training as a downward pressure on the bottom line, rather than an investment; and fear the employee will expect a higher salary because of the higher skills level. Employers often find it difficult to provide a pathway or opportunities for an employee to develop professionally because the next step is often business ownership.
- The lack of people management skills in the industry is seen as a challenge to retaining a suitably skilled workforce. Good managers play a significant role in influencing the employee's level of commitment and retention. While communication is a major factor of retaining suitable employees, poor job design, in-flexible approaches to how a task is done, repetitive and labour intensive jobs and weekend work can lead to attrition in the workplace. There is a general perception, from the general population, that the industry gives preference to investing in technology and machinery rather than people.
- The average tenure of an employee was perceived as a challenge in retaining a skilled workforce, i.e. the high turn over of farmhands gave the impression that there were limited opportunities in the industry. Employees were influenced to stay with their employer when they were offered an opportunity to undertake formal and informal professional development and individual attention on career development and mentoring.
- The geographic isolation of farm businesses can sometimes be a limiting factor when it comes to retaining good employees. Regional areas can sometimes lack suitable employment opportunities for spouses to gain meaningful employment; and it can sometimes take a long time to “fit in” to a new rural or regional community. The availability and affordability of suitable housing is another key limitation to attraction and retention, particularly in regional areas.

Challenges in upskilling a workforce

- Age was often used as reason for not upskilling or participating in training, i.e. “you can’t teach an old dog new tricks”. Farmers of this era tended to outsource or buy-in the skills they lacked i.e. bookkeeper, accountant etc. Age or generation as emphasised by table 3, (*Generations Defined Socially*), highlights the need for training providers to consider the preferred learning styles or mode of delivery of the target audience.
- Perceived misalignment of training outcomes and the actual requirements of agriculture sector businesses. Many employers (and employees who are self-funding their own training) believe that the cost of training is too expensive and inflexible. The cost of essential training, like WHS, forklift and first aid, is also perceived as too high.
- Employers find it difficult to allow employees to spend time away from the business to undertake training. Training is often only undertaken when there is a profit or it is off-season for the enterprise. Training was often seen as a cost burden for farming businesses rather than an investment in the employee to improve business outcomes. Also, the commitment required for nationally accredited training is perceived as too long, particularly when you understand that the average tenure for a farmhand is two (2) years, anecdotally.
- Access to education and training in regional communities is important. The location of university and training campuses are seen as a vital source of future skilled employees and as a means of retaining young people within into the industry. It was interesting to note that a growing number of industry stakeholders are questioning why Agricultural Science was delivered from Hobart, when the greater value of agricultural production is located on the North West coast.

Challenges in skills and training (delivery)

- Low literacy levels, including technological literacy, makes it difficult for trainers to engage with participants. ABS data indicates that adult literacy levels in Tasmania are concerning, which makes it difficult for employees to cope with the demands of everyday life and work, like reading written instructions, safety signs, or chemical recommendations from agronomists. The most recent data on adult literacy levels in Tasmania (ABS 2006 Census) indicated Tasmania had the lowest level in the nation. To improve participation in skills and training activities, this must be addressed.
- Financial literacy skills have been raised as an area that requires a significant focus, particularly around budgeting, understanding financial ratios and understanding loan documentation.
- Business owners reported being disengaged from the training system and do not value what it provides. This is mostly due to the reputation RTOs gained in recent years for their “tick and flick” approach to delivering training, where they can rush qualifications through by using recognition of prior learning (RPL). Employers have been frustrated by sending an employee to training who still can’t adequately do the task upon their return; they find it hard to see the link between improved skills and better business outcomes.
- The traditional ways of farming have advanced over time and in advanced sectors high technology, such as drones or iPads, is already being deployed. Current and emerging technology has the potential to make some of the training provided at the VET level irrelevant. AgriFood Skills Australia has reviewed the national training packages and this issue is expected to be recognised through that process.
- The poor image of agriculture is a barrier to attracting and retaining people to study in the industry. The number of students graduating from the University of Tasmania (UTAS) and VET related courses is extremely low, and falls well below industry workforce requirements. 2015 enrolments at UTAS are the only exception to this (also see University on page 39). National statistics suggest that there are 5-6 jobs for every agricultural graduate.
- Employer incentives to take on a trainee or apprentice may have limited impact, particularly where the employee has a previous qualification, unless the occupation is listed on the National Skills Needs List (NSNL). Shearing and arboriculture are the only primary industries currently reflected on this list.
- The issue of declining numbers of trainees and apprentices could be a result of heavy seasonal demands regarding employment i.e. a producer may only be able to provide full-time employment for six months per year.
- Concern that VET trainers have little practical industry experience. While researching for this Scan, it was common to hear the comment “I done a ChemCert course and I knew more than the trainer”. Consultation with TasTAFE found it is aware of this view and are proactively looking at solutions to rectify this perception. Industry professionals (not RTOs) also have made the comment that some employers can have unrealistic expectations of both RTO teachers and employees with regards to training. The industry values VET when the skills and positive impacts are immediately transferable to the enterprise.
- Employers have a low awareness of available courses or programs. Even when employers are engaged in training activities, many employers don’t understand their role within the training activities. Many stakeholders communicated that they find the training system highly confusing; and that they find it hard to ascertain information about eligibility for training subsidies, which can make it more attractive to participate in upskilling activities.

Gaps in data collection to support future workforce planning

Due to much of the information about workforce planning in primary industries in Tasmania being anecdotal - and the increased use of foreign workers - statistics currently available may not provide an accurate picture of primary industry employment landscape.

Increased demand for food and fibre produced in Tasmania, changing demographics, worldwide competition for skilled workers from other sectors, and changing markets makes it difficult to predict and achieve optimal staffing and service levels.

The current gaps in data include:

- Staff turnover rates by occupation, type of farm, size of business
- Length of tenure of full-time employees and the cost of staff turnover to the business
- Appetite of employers for workforce development
- Skills development appetite from employees
- Learning and communication preferences
- Number of full-time and part-time vacancies per farm, in comparison to other industries
- Seasonal labour demands per industry and region
- Composition of the workforce i.e. what proportion of self-employed, family and casual workers
- Is the current investment in skills and training robust enough
- Hard-to-fill vacancies, particularly in specialised and critical occupations
- The number of people and roles the industry needs to attract to achieve the Agrivision 2050.

The establishment of an industry-wide workforce development survey will provide the Agriskills Project, and the industry more broadly, with a foundation for providing government with quality advice on strategic investment in skills and training. This survey would deliver more targeted solutions to improving the workforce development culture in the primary industries sector and build on the work already completed.

Education, Skills and Training Market

Overview

As at the 30th of June 2015, there were 19 endorsed RTOs delivering primary industries training in Tasmania. TasTAFE has traditionally held market dominance for training in the sector. TasTAFE have reported to this Scan that it currently employs a total of nine (9) permanent teaching staff delivering agriculture and horticultural production training. The majority of staff have been with TasTAFE for some time, although recent restructures has seen a number of long-serving permanent staff leave the organisation.

AgriTas, located at Smithton, has emerged as an alternative provider, under the auspice of Wodonga TAFE. The collaboration between AgriTas and Wodonga TAFE is an emergent partnership that is thought to bring competition to the VET sector in the state. Wodonga TAFE has a solid reputation for performance, particularly in the agriculture and horticulture sectors in Victoria; and the organisation has shown it is willing to consult with the industry and respond to the needs, where possible, of Tasmanian primary producers.

Overall, there is mixed feedback from industry and students on the current staff capability, currency and responsiveness of RTOs operating in this space (also see “Challenges in skills and training (delivery)”). While RTOs are largely responsible for the courses they have in their training scope, government-funding models may also largely drive this. For example, a number of niche industries in the early development phase, such as beekeepers, require skilled people in low volumes which makes this training potentially uneconomical for RTOs to have on their scope. General feedback from the industry suggests that where training was meeting industry expectations, was where industry, RTOs and other stakeholders were taking joint responsibility for the outcomes through partnerships, such as the current partnerships between TasTAFE and the wool and production horticulture sectors; and the dairy sector through the National Centre of Dairy Education Australia (NCDEA).

The Environmental Scan conducted by Agrifood Skills refers to the industry appetite for skill sets. It goes on to explain that its enthusiasm for skill sets is in no way at the detriment of full qualifications, simply that skill sets form an equally valued and funded pathway within all jurisdictions. Throughout this Scan it was clear that the primary industries sector in Tasmania also had a strong preference for training based on skill sets, particularly for upskilling existing workers or for pre-employment pathways. Many stakeholders spoke of a need for greater flexibility in funding and delivery of training skills, in particular Fruit Growers Tasmania (FGT) and DairyTas, through their skills plans. Skills Tasmania has acknowledged the industry voices and has committed significant funding to skills sets.

In recent years an increasing proportion of training in the agriculture sector has been conducted ‘in-house’ by larger industry employers and/or unofficially recognised training programs and providers, similar to education and training obtained through the former FarmBis program. FarmBis had a significant role in providing specialist training to farm owners and managers of the sector, with the delivery of 309,000 training activities between 1998 and 2008 for approximately 206,000 participants.

To remain competitive on the world stage, and to meet the State Government’s aspirational 2050 vision, the industry will need to develop a strong understanding of the skills needed on-farm, and know how well these needs are currently met by primary industry training providers. An analysis of how well these services are being provided in terms of supply, range, accessibility and effectiveness of delivery, is also required. The solutions to these long-standing problems will not be an overnight fix. It requires innovative approaches from the industry as a whole, and the government, to improve the current offer, which aids in creating long-term partnerships that drive innovation and growth for the sector.

It has been widely acknowledged by the Panel, and the industry more broadly, that the level of change required to improve the workforce development culture in the industry is significant and goes beyond the schedule of the Agriskills Project. However, it is also recognised that the project will provide a substantial foundation and benchmarks for the industry to build on as the sector works towards growing to \$10 billion per annum by 2050.

In Tasmania, the Tasmanian Board of Agricultural Education (TBAE) formerly oversaw the coordination and promotion of agricultural education for the state. The board was comprised of the public sector: University, TAFE, Department of Primary Industry, Water and Environment and the Department of Education and industry represented by TFGA. The Tasmanian Rural Industry Training Board (TRITB), also known as the Rural Industry Training and Education (RITE) went into recess after the Federal Government ceased funding in 2002 for all state-based industry training boards.

The advancement of a model similar to TBAE, or TRITB/RITE, would be beneficial for improving the culture of workforce development in the sector.

Education (Kinder to Year 12)

Agricultural education providers, at most levels, have reported difficulties in filling available places over the past five years. This suggests a decrease in demand for agricultural education from students, which is contributing to the difficulty in filling the industry's labour demands. Insufficient student participation in agricultural-based courses and training programs, and the appropriate training provisions, means the difficulty in attracting a workforce to the industry will continue to be an issue.

It was reported to this Scan that prior to the education sector in Tasmania transitioning to the Australian Curriculum, agriculture was found front-and-centre of the Tasmanian Curriculum. This meant teachers were able to access professional development (PD) relevant to agriculture. Now that the Tasmanian education sector is working to a national curriculum, agriculture is embodied within the 'Food and Fibre Production' context within the Design and Technologies subject. Participation is mandated for students until the end of year 8 and then becomes "elective" in years 9 and 10. This means that agricultural educators in Tasmania do not currently have access to specialised professional development

In 2015, the Department of Education (DoE) created the Lead Teacher of Agriculture position, which is funded for four years to support agriculture teachers and school farms in Tasmania. Towards the end of 2015, support from the education and corporate sectors was growing. The *Tasmanian Agricultural Education Network* (TAEN) has been created by the incumbent to bridge this gap. Some additional funding and assistance from the DoE's digital platform *Fronter* has been provided to support this network. Furthermore, TAEN has begun work with Australian Curriculum, Assessment and Reporting Authority (ACARA) to develop teaching and assessment resources to support agricultural education.

The Primary Industries Education Foundation of Australia (PIEFA) (also see next page) and other farming bodies have worked together to develop learning resources for teachers to utilise in their classroom, based on the national curriculum. This is delivered via an online resource called Primezone (www.primezone.edu.au). PIEFA fund a Primezone Partnership Program with approximately 12 schools per annum as part of the Federal Government's 'Agriculture in Education' program. Schools selected as a Primezone partner receive \$10,000 to support the utilisation and promotion of the resource. The website is currently being upgraded and should be launched by mid-2016.

In general, there is significant feedback from educators regarding the outdated promotional materials for agricultural careers. The pathways aren't clear or modern, are extremely difficult to find, are of poor quality and are delivered in a way that does not connect with students. A well-promoted central platform would assist in delivering that information to the education sector and the wider public, which may assist in attracting students to consider a primary industries pathway.

Australian Council of Deans of Agriculture (ACDA, 2014) says that despite 90% of agricultural graduates finding jobs, career advisors are not encouraging students to take agricultural courses. While Tasmania does not have career advisors in place in the secondary level of education, it is widely acknowledged by the industry that it is asking too much of teachers to provide the right career information on top of providing students with educational outcomes.

There are a number of schools in Tasmania that will be transitioning to Kinder to Year 12 in 2016. While this brings about many benefits in the retention and engagement of students in the education system, it also presents some challenges for agriculture in the education space. For example, Campbell Town District High School (CTDHS) has a very large catchment area and students can come from as far away as Royal George. If a student from Royal George wants to study agriculture they would have to catch a bus from home to Campbell Town and another from Campbell Town to Launceston to somewhere like Launceston College or Lilydale, because CTDHS currently does not have the appropriate resources in place to provide relevant and meaningful experiences for students wanting to study agriculture. DoE reported to this Scan that they are in the process of developing a range of delivery options to support the sustainable provision of regional course offerings in Years 11 and 12, which would enable students to access relevant learning pathways.

School farms

In Tasmania there are approximately 21 schools that have a school farm. UTAS recently received a small grant to undertake a study in to the purpose of school farms in Tasmania, of which TFGA provided a letter of support on behalf of the Panel. It is expected that this study will uncover the true number of full-time equivalents working in agricultural education.

In 2013, the DoE conducted an audit of school farms in the state, and following on from that recommendations were made to principals that school resource packages (funding) should only be used to support DoE's strategic planning priorities, of which, school farms were not included. School farms in this state have a variety of purposes for existence, ranging from a connection to the community to educational outcomes for students, and the UTAS study will provide important feedback to the education sector and the industry more broadly. The most recognised school farm in Tasmania is Hagley Farm School, which marked 160 years of education in 2015 and welcomes more than 5,000 visitors per year from Kinder to Grade 6.

Primary Industries Education Foundation of Australia (PIEFA)

PIEFA was established in 2010 with the backing of the Federal Government, the National Farmers Federation and Rural Research and Development Corporations (RIRDC). In 2014, the Federal Government committed \$2 million towards improving the understanding of agriculture.

PIEFA released the results of a survey illustrating the disconnect between students and the source of food and fibre production in 2012. The research indicated that:

- 75% of students thought cotton was an animal product
- 27% of students thought yoghurt was a plant product
- 40% of Year 10 students believe farming damages the environment
- 43% of students did not link science to primary production
- 55% of students did not link innovation to primary production.

PIEFA is responsible delivering a range of online teaching resources for Kinder to Year 10. School-based partnerships were viewed as important in changing the perception of agriculture and in assisting to attract a new generation to work and study in agriculture. Raising the profile of agriculture begins at school, and engagement with the education sector has been highlighted as a priority in every skills or development plan for creating a pipeline for our future workforce.

Beacon Foundation

Beacon Foundation currently operates in the high school space to deliver a preventative approach to retaining students in the education system and/or helping them transition into employment through their three core programs: Core Community Model, High Impact Programs and Real Futures Generation.

MyEducation

My Education is an initiative of DoE, which is being implemented in Years 7 – 12 and will extend to younger students in subsequent years. *My Education* is a whole school approach to career and life planning that prepares students for participation in the workforce of the future. *My Education* is supported by professional learning for teachers. Regional Managers oversee the implementation of the initiative in the North and South and their work is supported with a range of Professional Learning offerings for teachers. In addition, the *My Education Online Career Planning Tool* is a key component of this program and has been localised to reflect local labour market needs will enable all teachers supporting Years 7 – 12 to explore areas of interest. The program has links to all of the major national career education portals.

Cows Create Careers

The Cows Create Careers farm module is an innovative Dairy Australia and Regional Development program that is delivered across 23 dairying regions in Australia. It introduces students to the Australian dairy industry and helps promote the many career opportunities on offer.

Skills market

During the consultation process many people identified a lack of interface and articulation between VET and higher education study. There is a strong preference for delivery methods with less focus on institutional training, such as field days, on-farm visits and/or focus groups, or courses with practical application rather than formal qualified training.

This Scan uses the Australian Qualification Framework (AQF) to provide an overview the skills and training undertaken in the primary industries sector in Tasmania:

Level 1 – Pre-employment

Level 2 – Certificate II

Level 3 – Certificate III

Level 4 – Certificate IV

Level 5 – Certificate V

Level 6 – Advanced Diploma, Associate Degree

Level 7 – Bachelor Degree

Level 8 – Bachelor Honours Degree, Graduate Certificate, Graduate Diploma

Level 9 – Master’s Degree

Level 10 – Doctoral Degree.

VET: Level 1 and Level 2

TABLE 7: LEVEL I AND LEVEL II PRIMARY INDUSTRY TRAINING OFFERED IN TASMANIA 2013-15

Name of Training Package	Funded places
Certificate I in AgriFood Operations	56
Certificate II in Agriculture	114
Certificate II in Conservation and Land Management	43
Certificate II in Production Horticulture	19
Certificate II in Rural Operations	14
Certificate II in Shearing	7
Certificate II in Wool Handling	5

SOURCE: Skills Tasmania, 2016

School-based Apprenticeships

Certificate II training is conducted in some school environments, mostly in the form of School-based Apprenticeships, allowing Year 10, 11 and 12 students to undertake a nationally-recognised qualification as an apprentice or trainee while still attending school.

An in-depth consultation conducted with the Manager of Australian School-based Apprenticeships (ASbA), from DoE, identified a number of initiatives to promote ASbAs to students. TFGA is currently participating in the development of the Northern Midlands Agricultural Industry ASbA Strategy, and may be involved in the North-West Coast Agricultural Strategy in the future.

Students who commence an ASbA may complete the qualification before leaving school, however, many of the higher-level qualifications, particularly in the trade areas, continue past the end of Year 12. ASbAs provide a vital link between education and employment i.e. students’ understanding the relevance of what they are learning in a classroom environment. Many of the ASbAs provide career pathways that give the trainee or apprentice a head start in their chosen vocation. It also provides employers with the opportunity to start shaping their future workforce from a very early age.

Trade Training Centres (TTCs)

TTCs are facilities that support secondary students from Years 9–12 to access vocational education and training, giving students a broader range of options to help improve Year 12 or equivalent attainment and

enhance pathways into agricultural careers. TTCs also provide the wider community with the opportunity to conceptualise their own skills and training requirements.

Shearer Shed Hand Training

The iconic Wool Harvesting Training Program, run by Primary Employers Tasmania (PET), has been run since 2009, and plays a major role in upskilling the current workforce or providing qualified training to new entrants.

Fourteen students participated in the 2015 program and obtained a Certificate II or III in Shearing or Wool Handling. In addition to learning about shearing and wool handling, the students had the opportunity to learn from industry professionals on topics such as WHS to ensure they are work-ready.

TABLE 8: LEVEL III AND LEVEL V PRIMARY INDUSTRY TRAINING OFFERED IN TASMANIA 2013-15

Name of Training Package	Funded places
Certificate III in Advanced Wool Handling	6
Certificate III in Agriculture	158
Certificate III in Agriculture (Dairy Production)	119
Certificate III in Arboriculture	30
Certificate III in Beekeeping	26
Certificate III in Conservation and Land Management	74
Certificate III in Irrigation	1
Certificate III in Production Horticulture	7
Certificate III in Shearing	9
Certificate IV in Agriculture	66
Certificate IV in Conservation and Land Management	30
Certificate IV in Production Horticulture	4
Certificate IV in Wool Classing	32
Diploma of Agribusiness Management	37
Diploma of Agriculture	58
Diploma of Conservation and Land Management	13
Diploma of Horticulture	39
Diploma of Production Horticulture	5

SOURCE: Skills Tasmania, 2016

The *Agricultural Skills Plan 2011-2014* identified that Farmhand skills, business management skills, leadership skills and machine operator skills were identified as being undersupplied at this level. Information provided by Skills Tasmania showed there were two institutions, TasTAFE and AgriTas (via Wodonga Institute of TAFE), providing training at Level 3 to 5 in 2014. The majority of primary industry related training offered through these RTOs was:

- Certificate III in Agriculture
- Certificate III in Agriculture (Dairy Production)
- Certificate IV in Agriculture
- Diploma of Agribusiness Management
- Diploma of Agriculture.

In the AQF Levels 1-5 the industry has identified a number of key challenges in attracting the primary industries sector to value and participate in nationally-recognised training:

- Reforms in the national training system
- Revision of the current government funding system
- Introduction of the VET FEE-HELP student loan scheme (user pays system)
- Changes to public provider structure (and restructure of TAFE to TasTAFE, including Polytechnic and Skills Institute)

Trainee numbers are declining and the female participation rate is low (*AgriFood Skills 2014*). During the consultation process a significant number of people asked about the future direction of the TAFE Farm at Burnie, and many expressed that it was the ideal training ground for the industry's future workforce. This area relies on a good relationship between RTOs, trainees and employers. If the relationship is managed well this suggestion could act as a feeder into university courses. The industry would benefit from further research in this area.

Level 6-10: University

Bachelor Degree

- Bachelor of Agricultural Science
- Bachelor of Applied Science (Agriculture and Business)
- Bachelor of Animal Science

Bachelor Degree with Honours

- Bachelor of Agricultural Science with Honours
- Bachelor of Agriculture with Honours

Master of Agricultural Science

- Master of Applied Science (Agricultural Science)
- Master of Business Administration (Professional)

Higher Degrees

- Doctor of Philosophy (Agriculture).

With the exception of UTAS, which had the best year for enrolments in 2015, completion numbers of primary industry related courses in Tasmania have been declining year-on-year. The number of graduates nationally completing agriculture and agricultural-related courses is estimated at 700 per year, which is well below the 4000 advertised each year (*Blueprint for Australian Agriculture 2013-2020*, Pratley 2012). Pratley 2012 also indicates that the number of agricultural graduates being supplied by Australian universities is less than 20% of what the industry needs to satisfy the Australian job market.

The National Agriculture Workforce Development Plan cites that in 2005 there were around 1,000 agricultural and forestry graduates in Australia, which then declined to approximately 650 by 2010. The decline in graduates has led to a number of occupations being included on the Skilled Occupations List (SOL), which allows migrants to obtain a permanent independent migration to Australia for the purpose of filling those occupations. Unless the industry can do more to attract and retain a skilled workforce the reliance on the SOL will increase; and we will see more occupations added to that list.

Traditionally, students doing business-related study in agriculture had to leave the state to study at somewhere like Marcus Oldham Agricultural College (MOAC), Lincoln University in New Zealand or the University of New England in New South Wales. The industry would benefit from further exploration into the reasons why Tasmanian students choose to study outside of the state, however, circumstantial evidence suggests that its due to the agricultural offering at this level being largely science based. There is a real need for rural business management or agribusiness-based courses. MOAC reported attracting approximately 15 students per year across their farm business management or agribusiness courses.

It is a real concern that the continual decline in graduate numbers could lead to the loss (or substantial decline) of VET and university facilities in Tasmania, further compacting the issue and leaving a permanent skills shortage that will be harder to address. The Tasmanian Agricultural Productivity Group (TAPG) has been instrumental in lobbying UTAS to produce agri-business graduates. In 2016, the Bachelor of Applied Science (Agriculture and Business) (K3T) at UTAS was introduced to replace the Bachelor of Agriculture in response to industry demands. The introduction of the K3T goes some way to improving the business element currently missing from the tertiary offering in Tasmania.

At the time of this Scan, there had been several media reports regarding plans to introduce a two-year Associate Degree of Agribusiness in 2017 at the Cradle Coast campus of UTAS. TFGA (through the Agriskills Project) and other industry stakeholders have participated in initial consultations and surveys regarding the structure and delivery of this potential offering.

FIGURE 7: INFOGRAPHIC UTAS 2015 ENROLMENTS

UNIVERSITY OF TASMANIA

RECORD AGRICULTURE ENROLMENTS

43

1ST YEAR STUDENTS
COMMENCE IN 2015



17

BACHELOR OF
OF
AG SCIENCE



22

BACHELOR OF
AGRICULTURE



4

BACHELOR OF
ANIMAL
SCIENCE

WHERE DID THEY COME FROM?



22%
ABOVE
PREVIOUS
RECORD
INTAKE!



SOURCE: TASMANIAN INSTITUTE OF AGRICULTURE

A desktop review of agricultural education in Tasmania, via this Scan, anecdotally supports the industry perception that there are no (or limited) promoted pathways between high school VET level courses, to university and primary industry careers. The industry would benefit from developing (or better promoting) a bridging course or program, between the VET and tertiary education sectors. This includes better linkages between VET and university to create correlations between Research and Development (R&D) outcomes. In the past, the role of government officers who were located in regional areas were the vital link between farmers and R&D extension.

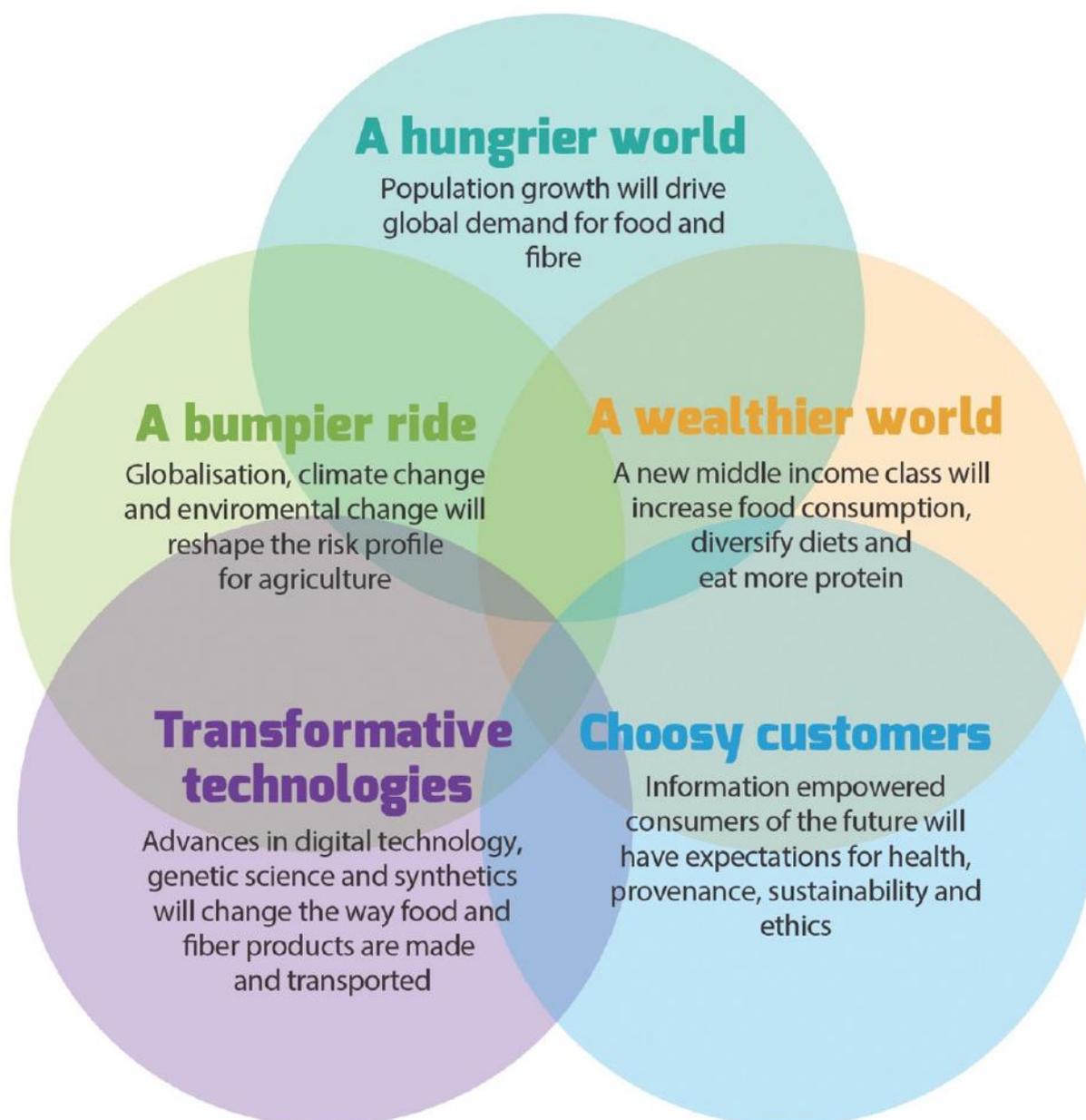
There is a strong feedback from industry employers that university graduates are not work-ready. Meaningful work experience is only one part of the picture in ensuring that graduates are work-ready. Improved completion rates and uptake may mean that intervention to better match employers and trainee/apprentices is necessary. Many employers have unrealistic expectations that graduates will be work-ready as soon as they complete study, when in reality they may only have theoretical knowledge.

FUTURE TRENDS, OPPORTUNITIES AND SKILLS NEEDS

What do the primary industries sectors in Tasmanian look like in the year 2030? What is the recipe for success in creating a \$10 billion industry by the year 2050?

Rural Industries Research and Development Corporation (RIRDC) and CSIRO have highlighted five key megatrends that will significantly impact the future of Australian agriculture in the next 15 to 20 years. These megatrends are illustrated below:

FIGURE 11: AUSTRALIAN AGRICULTURE MEGA TRENDS



SOURCE: Rural Industries Research and Development Corporation (RIRDC) and CSIRO, 2015

A hungrier world

Experts predict the global population will increase to around nine billion by 2050, meaning farmers need to increase food production by 70-100%. To put this estimate into context: in 1950 one farmer in Australia produced enough food to feed less than 20 people, so by 2050 one farmer will need to feed more than 650 people off the same land area, or less, than those farming in the 1950s.

In fact, in 2010 Australian farmers used 7.3% less land than they used in 1950 and produced 220% more by utilising improved and innovative farming practices. With many primary producers finding it hard to attract a skilled workforce labour, and at a point in time where there are more millionaires in China than the whole population of Tasmania, it creates a wonderful opportunity for this state to capitalise on the reputation of our produce.

The Asian middle class is set to increase six-fold by 2030. It is important to develop and adopt innovations and new technologies, particularly in dry land cropping and pasture-based production systems, as the industry learns to deal with the significant climate change effects and the challenges in the availability of skills and labour. By 2050 there will be 70%, or 2.3 to 2.4 billion, more people on earth who will need 60% to 70% more food than what is currently available.

A wealthier world

While the world has generally become wealthier in the past decade, farm debt has increased by 75%. Many struggling farmers need to be supported and some producers should exit the industry if it is to meet the increasing global appetite for quality protein. Mining has declined in recent years and we are now expected to experience the “dining boom”.

RIRDC says that in Asia alone over one billion people are expected to move out of poverty as average incomes rise from US\$12,000 to US\$44,000 per person by 2060. This presents an opportunity for Tasmanian primary industries to identify new food types and connect to new markets.

The traditional farming family is fast being replaced by corporate agriculture, as Deloitte eludes to in its report *Positioning for Prosperity*. It described agribusiness as a forgotten hero of Australia’s economy. To become the hero of the economy, capital models will change with the introduction of “disruptive” technologies and maybe peer-to-peer lending.

Fussier customers

The *Blueprint for Australian Agriculture 2013-2020* considered the ‘likely’ future would be a world driven by strong population growth, with continued urbanisation of that population. Consumer attitudes to natural versus technologically-enhanced products, growth in food demand, convenience and health will also have a large bearing on the future of the industry. This will drive a demand for retail and packaging innovation, such as intelligent packaging.

Social and corporate responsibility will be brought to the forefront, with consumers more empowered than ever due to information at their fingertips. The consumers of 2050 are likely to expect food to be nothing less than healthy, nutritional, clean, green and ethically produced. Provenance of food production (knowing where and how food and fibre is produced) will be an important factor in customer satisfaction.

Transformative technologies

Farmers will be able to make better decisions and manage risk more effectively, while consumers will have greater access to trace the origins of their food, putting production methods under the spotlight. Sense-T in Tasmania is helping to build an economy-wide sensor network and data resource, creating a digital view of Tasmania and giving industry, governments and communities the tools to solve practical problems and make better decisions.

Advanced digital, genetic and materials science technologies will enable farmers to improve how they produce food and fibre products. While innovative sensory systems and data analytics will create highly integrated 'farm to fork' supply chains. The industry has a slow culture of change, especially around the adoption of technology.

Disruptive technology (smart and sensing technology), such as smart phones, drones and driverless tractors, will become a way of the future and the industry must learn to adapt to change. The industry must ask, "how willing am I to be disrupted?" Production gains will be limited if farmers are deterred from innovation because of high risk and high cost. Telecommunication technology infrastructure will need to improve to move the industry forward, especially in regional Tasmania, to support even the most basic business processes, like electronic communication and banking.

Bumpier ride

With increased financial pressure on family farming businesses, and as many of our primary producers pushing towards retirement as the average age of farmer's increases, there is a need to increase the use of technology on-farm. This, in itself, brings a new set of challenges around the adaption of innovation and ability to implement disruptive change, including speed to market.

The uptake of new technology and scientific advancement varies, however, the changing nature of primary production means these innovations require new skill sets and a higher level of strategic thinking, including a greater focus on people management. Other factors that need to be considered if the industry is to grow are the impact of policy and legislation, foreign ownership, free trade agreements, freight capacity and the significant requirement for R&D investment to meet the challenges ahead.

Scientific, technological and innovative advancements are sure be vital ingredients in the recipe to grow the farmgate value of primary industries in Tasmania. This is particularly the case when issues such as food security, climate variability, increased competition for land and water, consolidation of farms and a shrinking workforce are added to the mix.

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