



# Australian Food, Beverage and Pharmaceutical Product Manufacturing Industry Sector

## Annual Update 2020

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### IRC Skills Forecast and Proposed Schedule of Work

Prepared on behalf of the Food, Beverage and Pharmaceutical Industry Reference Committee (IRC) and Pharmaceutical Manufacturing IRC for the Australian Industry Skills Committee (AISC).



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# Purpose of this Skills Forecast

This Skills Forecast and Proposed Schedule of Work presents the latest industry intelligence from the Food, Beverage and Pharmaceutical Industry Reference Committee (IRC) and the Pharmaceutical Manufacturing IRC, inclusive of national and industry data sources and input from key stakeholders. It further proposes vocational education and training (VET) Training Package review and development work that the IRC deems necessary to meet the needs of industry. The Australian Industry and Skills Committee (AISC) considers this information and includes commissioned work in the National Schedule<sup>1</sup>.

At its June 2019 meeting, the AISC changed the requirements for the annual Skills Forecast. IRCs are now required to submit comprehensive Skills Forecasts once every three years, with abridged annual updates in the intervening two years. As IRCs submitted comprehensive Skills Forecasts in 2019, the next are due in 2022.

This document is not intended to be representative of every issue encountered across all industry sectors; it identifies and addresses the challenges and opportunities that industry has determined as 'priority' for this stage of the schedule, and is a resource for industry and associated skills, learning and accreditation bodies seeking to act upon them.

Detailed information concerning industry skills needs across all sectors covered by the Food, Beverage and Pharmaceutical IRC and the Pharmaceutical Manufacturing IRC, including information from previous Skills Forecasts, can be found on the Skills Impact website: <https://www.skillsimpact.com.au/food-beverage-and-pharmaceutical/skills-forecast/>.

## Method & Structure

This is an annual update to the comprehensive Skills Forecast submitted in 2019. IRCs are required to answer the questions in **Section A** to provide updates on issues such as industry skills and workforce development, and qualification utilisation.

IRC's are also permitted to propose additional Training Package development work projects to be included in the Proposed Schedule of Work. Where relevant, these are included in **Section C**, which includes:

- Evidence of employer and industry need for graduates;
- Alignment to Ministers' Priorities;
- Consultation plan.

**Section B** details the extensive, robust and ongoing industry consultation undertaken by IRC members and Skills Impact, including with rural, regional and remote stakeholders. In line with Skills Impact's values<sup>2</sup>, this helps to ensure transparency and accountability in the process of industry research and Training Package development work.

This Skills Forecast and Proposed Schedule of Work is developed in line with:

- Standards for Training Packages 2012<sup>3</sup>;
- Training Package Products Policy<sup>4</sup>;
- Training Package Development and Endorsement Process Policy<sup>5</sup>.

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<sup>1</sup> <https://www.aisc.net.au/content/national-schedule>

<sup>2</sup> <https://www.skillsimpact.com.au/about/>

<sup>3</sup> <https://docs.education.gov.au/documents/standards-training-packages-2012>

<sup>4</sup> <https://docs.employment.gov.au/documents/training-package-products-policy>

<sup>5</sup> <https://docs.employment.gov.au/documents/training-package-development-and-endorsement-process-policy-0>

# Industry Reference Committee

The Food, Beverage and Pharmaceutical IRC and Pharmaceutical Manufacturing IRC are responsible for national Training Package qualifications relevant to food and beverage processing and pharmaceutical manufacture.

Qualifications overseen by these IRCs are in the Food, Beverage and Pharmaceutical Training Package.

The Food, Beverage and Pharmaceutical IRC and Pharmaceutical Manufacturing IRC are supported by the Skills Service Organisation, Skills Impact.

## Food, Beverage and Pharmaceutical Industry Reference Committee

<b>Name</b>	<b>Organisation or Area of Expertise</b>
Anne Astin (Chair)	Expert (Food Science)
Brett Noy	Expert (Baking)
Briannon Avery	Expert (Pet and Stock feed)
Carolyn Macgill	Australian Industry Group (AiGroup)
Dean Swindells	Australian Technical Millers Association (ATMA)
Fiona Fleming	Australian Institute of Food Science and Technology Ltd (AIFST)
Geoffrey Annison	Australian Food and Grocery Council (AFGC)
Henrik Wallgren	South Australian Wine Industry Association (SAWIA)
Ian Curry (Deputy Chair)	Australian Manufacturing Workers Union (AMWU)
Liz Newlan	Bega Cheese Limited
Geoff Parker	Australian Beverages Council (ABC)
Nicole Lam	Carlton and United Breweries (CUB)
Richard Adamson	Independent Brewers Association (IBA)
Daniel Shipard	Australian Sugar Milling Council (ASMC)

## Pharmaceutical Manufacturing Industry Reference Committee

<b>Name</b>	<b>Organisation or Area of Expertise</b>
Paul MacLeman (Chair)	Expertise in pharmaceutical manufacturing
James Thomas	CSL Behring
Louise White	SeerPharma
Carolyn Macgill	Australian Industry Group
Anne Donnellan	Australian Manufacturing Workers Union
Charles Ross	Vaxxus
Dan Grant	MTPConnect

# Executive Summary

The Food, Beverage and Pharmaceutical Industry Reference Committee (FBP IRC) and the Pharmaceutical Manufacturing IRC (PM IRC) have had a productive year. The FBP IRC is currently overseeing one of the largest Training Package product development projects undertaken, which will result in almost the whole of the Training Package having been updated to meet current industry needs.

The next stage is to complete the final updating, by proceeding with the programmed review of qualifications in flour milling and high volume production baking (plant baking), with the likely deletion of qualifications and incorporation of skills into existing or newly developed qualifications. This has led to an issue which is being considered by the IRCs: feedback from industry leaders and experts during the current project has indicated that the work on flour milling and plant baking should be completed prior to the release of the current work on the food processing qualifications. However, it is also acknowledged that the updated training should be introduced as soon as possible, given the outdated nature of the food processing qualifications. A factor is the additional resource and cost implications of separate releases for regulators, state and territory governments and RTOs.

The FBP and PM IRCs are aware that large projects, such as the one currently being undertaken to review more than 180 units of competency, involve significant complexity in utilising volunteer time, finding and organising industry experts and ensuring adequate and broad feedback, as required under the relevant standards. To have tried to complete the flour milling and plant baking qualifications at the same time would have led to greater complexity, and a likely reduction of the quality of the outcomes. It is unlikely that a project of that complexity would have been approved, and also unlikely that it could have been practically implemented.

The decision will be between a single release resulting in a delay of approximately 8-12 months in the availability of the updated training, or two releases, with some qualifications and units having major changes in both releases. The FBP and PM IRCs are acutely aware of concerns around the speed of completion of the Training Package product development work, but have been dealing with qualifications and units that have not been appropriately updated for a decade or more, and have almost completed fully updating the training package in under four years of operation.

The Pharmaceutical Manufacturing Industry Reference Committee is currently completing the final proposed project, relating to pharmaceutical bioprocessing. At the conclusion of this work, the Pharmaceutical Manufacturing IRC has taken the decision to dissolve as a separate entity, with the former representation to be reinstated on the FBP IRC. While the Pharmaceutical Manufacturing IRC has fully updated its elements of the Training Package and overseen the work for new skills relating to pharmaceutical bioprocessing, this has not translated into RTOs offering training in the sector or any improvements in enrolment numbers. The Pharmaceutical Manufacturing IRC was unable to gain support for work to directly address these issues (submitted in the Skills Forecast 2019 – 2022) and is disappointed about the lack of uptake of the new qualification or support to encourage that uptake.

The FBP and PM IRCs are closely monitoring emergent industry sectors, including alternative proteins, indigenous foods and packaging innovation, along with external factors that affect industry operations, including environmental impacts of drought, bushfires and climate change, and the impacts of rapidly changing technology. The issue of duplication and utilisation of Training Package products has been looked at in the context of specific industry skills needs. During the coming year, the FBP and PM IRCs will take the opportunity to look at these issues more holistically based on an almost fully updated Training Package.

Late in 2019, The FBP and PM IRCs were notified of the change in the processes relating to Industry Skills Forecasts, resulting in a request for Annual Updates to be submitted. These documents are a significant change from the previous approach, and the IRCs acknowledge that as a result of focus on the Training Package product development work and Skills Forecasts, there will be a lack of available data and specific work this year to address the matters raised in the Annual Update. More work will be undertaken in these areas over the coming year. Of the matters raised, the FBP and PM IRCs are particularly interested in understanding the connections between low levels of completion and high levels of employment outcomes and training satisfaction.

# Section A: Overview

## Preliminary Note

The FBP and PM IRCs have reviewed the guidance for the Annual Update to Skills Forecasts and Program of Works process. This document will be developed at a strategic level while addressing the information requests outlined in the guidance. Much of the information being requested is not currently available to the IRC. Where relevant and in keeping with the strategic approach of the IRC, additional data will be developed during 2020 for the next Annual Update.

The FBP and PM IRCs also support the work of NCVET, and have tried to identify areas in which NCVET should be supported to provide the relevant data to IRCs and resources to undertake additional research work. The FBP and PM IRCs have also tried to identify areas where data may be held by other bodies, which would need to take decisions as to whether they are prepared to share that information. This is outside both the influence and scope of these IRCs.

The FBP and PM IRCs believe that the needs of industry as a whole are best served by ensuring it has most of its focus on strategy, rather than focusing on a transactional approach to skills needs. This is a common approach taken throughout FBP businesses, and is the approach these IRCs have taken to all of their work, including the creation of this Annual Update.

## Industry Developments

### **Flour and grain milling**

The flour and grain milling industries, including human food and stock feed milling, are undergoing rapid change. Inputs from other industries, such as rice and grain production, have been limited due to drought conditions<sup>6</sup>. While this has impacted on industry revenue, some artisanal and specialist producers have found solutions by catering to the growing demand for healthier options, including organic, gluten-free and wholemeal products. The trend for operators in niche markets suggests that they are increasing in size with reasonable growth levels. There is pressure on mid-level manufacturers who are leaving the industry and major companies are increasing their market share. This trend favouring major companies has seen large-scale automation and digital equipment increasingly being used to boost productivity, with consequences for the profile of industry worker, though the use of technology extends well beyond major manufacturers. The necessary skills for the workforce are evolving beyond 'traditional' practices to include machinery, supply chain and traceability systems management and food safety regulations compliance. This has increased the need for highly trained and skilled technical millers<sup>7</sup>. At present, new employees' technical milling skills are gained through an international correspondence course and supplemented by practical exercises facilitated by an industry association.

#### *Proposed approach*

Qualifications relating to flour and grain milling were scheduled for review during 2020 – 2021 in the FBP Skills Forecast 2019 – 2022, and it is intended that this project should proceed. Consideration is being given as to whether this project should be incorporated with the current review of food processing qualifications to ensure the best outcome and the additional deletion of qualifications or units of competency that may result, without undue administrative complications and the additional costs of multiple changes to Training Packages.

### **High volume production baking (plant baking)**

Plant baking, operating food processing and packaging machinery, technology and processes in factories that produce bread, bread products, biscuits and cakes, is also becoming increasingly digitalised and automated. Sector-specific skills are gradually being replaced with those used in general food and beverage processing plants as the operation of machines, for example to perform cooling and slicing tasks, becomes more uniform throughout the industry. Many of the required skills and knowledge, including enhanced quality control, traceability and supply chain systems, and understanding and managing allergens and contaminants, are similar

<sup>6</sup> IBISWorld, 2019, C1161 Flour and Grain Mill Product Manufacturing in Australia Industry Report

<sup>7</sup> <https://www.atma.asn.au/training>

to the generic skills that are reflected in the units and qualifications under review for the food and beverage processing industry.

#### *Proposed approach*

Qualifications relating to plant baking were scheduled for review during 2020 – 2021 in the FBP Skills Forecast 2019 – 2022, and it is intended that this project should proceed. Consideration is being given as to whether this project should be incorporated with the current review of food processing qualifications to ensure the best outcome and the additional deletion of qualifications or units of competency that may result, without undue administrative complications and the additional costs of multiple changes to Training Packages.

#### **Technology and automation**

Technological advancements in the food, beverage and pharmaceutical processing industries have driven a demand for higher numeracy, literacy and equipment operator skills, as well as problem-solving skills (especially in SME businesses). A reduction in the manual roles in food, beverage and pharmaceutical factories is concurrent with increasing automation, which requires a greater level of digital literacy; for example, in operating computerised touch screen interfaces to control a variety of machines. Innovations such as 3D printers are also changing food and pharmaceutical production and processing<sup>8</sup>. Developing food by “printing” ingredients into a food product is technically possible now, though not yet common. The ethical and nutritional potential of these innovations challenges traditional agricultural and food manufacture systems, and there is a need to seek new solutions for improving “supply certainty, product quality, sustainability and reduce volatility.”<sup>9</sup>

#### *Proposed approach*

It is recognised that many of these skills may come from outside the FBP Training Package and be incorporated into the context of the food, beverage and pharmaceutical manufacturing industries.

The FBP and PM IRCs are acutely aware of the possibilities of duplication of content or fragmentation of skills if training is developed within an FBP context. These IRCs have asked the SSO to ensure analyses are undertaken of available training in other Training Packages, as far as is possible, to ensure that other solutions are fully explored before the IRCs will consider approval of product development for technology and automation within the FBP Training Package.

These developments and skills changes are being incorporated into existing and future projects.

#### **Alternative proteins**

Alternative protein foods, including plant-based meats, insects, algal and microbial proteins, new varieties and uses for legumes and edible hemp are in greater demand than ever before<sup>10</sup>. While products such as meat-free burgers have been available for decades, targeting the vegetarian and vegan markets, 2019 saw an upsurge in alternative versions of meat-based foodstuffs intended to appeal to flexitarians and carnivores, using proteins such as soy and pea. Non-traditional protein sources, including insects and algae, have also garnered greater attention nationally, especially for their potential as livestock feed<sup>11</sup>.

The impact of alternative proteins on the broader food and beverage processing industry in Australia is so far modest but has been rising year-on-year. As Food Frontier assert, “Plant-based meat is currently an emerging sector in

Skye Blackburn from The Edible Bug Shop has farmed insects for food for over 12 years. In that time, she has seen consumer demand for sustainable, nutritious and ethical food increase. The market for insect protein in confectionary, snacks and powder form is steadily growing as our reliance on meat production reduces. Manufacturing products such as tortilla chips and pasta made from powdered crickets, Skye has built a successful business promoting edible bugs as a healthy and environmentally sustainable source of protein.  
<https://ediblebugshop.com.au/>

<sup>8</sup> Forbes, 2019, *How Technology Is Transforming The Food Industry*, viewed February 2020, <<https://www.forbes.com/sites/nicolemartin1/2019/04/29/how-technology-is-transforming-the-food-industry/#6cc0000c20a3>>

<sup>9</sup>KPMG, 2018, pp 12 & 35, *Talking 2030: Growing agriculture into a \$100 billion industry*, National Farmers’ Federation

<sup>10</sup> <https://www.foodmag.com.au/top-food-trends-for-2020/>

<sup>11</sup> AgriFutures Australia, 2019, *The Changing Landscape of Protein Production: Opportunities and challenges for Australian agriculture*

Australia, generating approximately \$150 million in Australian retail sales, almost \$30 million in manufacturing and supporting 265 jobs in 2018-2019. By 2030, however, modelling suggests that if the current moderate growth trajectory continues, the sector will generate almost \$3 billion in retail sales, over \$1 billion in manufacturing and employ over 6,000 Australians<sup>12</sup>. Additionally, CSIRO estimates that the global edible insect market is expected to grow from US\$34 million in 2014 to over US\$520 million by 2023<sup>13</sup>.

**“Alternative proteins will have a key role in the food of the future. But so will meat. With the number of mouths to feed growing by on average 1.8 times the size of Australia’s population per annum for the next 32 years, there will be an increased need for protein sources. Plant-based proteins are expected to make up 33 per cent of the protein market by 2054 up from a current market share of less than five per cent by value (600 per cent increase). Both meat and alternative plant or algae-based proteins will clearly have a critical role to play in filling the dietary needs of two billion extra people, but our farming systems also need to dramatically evolve to produce more food using less land and resources.”**

*KPMG, 2018, p.34, Talking 2030: Growing agriculture into a \$100 billion industry, National Farmers’ Federation*

Demand for alternative proteins is driven by consumers’ desire to eat healthier, ethically-produced food, and reduce environmental impacts. The sustainability of alternative protein production – which has been estimated to use 99% less water, 93% less land, 46% less energy and produce 90% fewer greenhouse gas emissions<sup>14</sup> – is increasingly appealing to the growing population in Australia and in key export markets, especially Asia. With animal farming under heightened levels of scrutiny<sup>15</sup>, agricultural producers are responding to emerging market opportunities, while food technology research and development is innovating with lab-grown meats, and commercial entities are funding new product development<sup>16</sup>.

#### *Proposed approach*

The IRC has been advised that an important skills element of work in alternative proteins relates to filtration systems, along with supply chain and agronomy skills, which may vary with different proteins, especially with classes of insects. The IRC will continue to monitor the growth of this market and research the need for skills not currently covered within the Training Package.

#### **Indigenous foods**

The burgeoning indigenous food industry involves sourcing, processing and selling plant and animal products that are indigenous to Australia and sometimes to a specific region. According to a peak body in the sector, Australian Native Food and Botanicals (ANFAB), demand for native foods is ever-increasing due to consumer demand for products with proven health benefits and uniquely marketable provenance. Aboriginal communities have long known the nutritional benefits of bush foods, such as ribberries, desert limes, bunya nuts and lemon aspen, but the potential of this Australian industry is as yet unrealised<sup>17</sup>.

There is clearly an appetite – and market – for indigenous foods. World-renowned restaurants such as Attica in Melbourne<sup>18</sup> are increasing integrating indigenous foods within their menus. Multi-national companies are also embracing them, with Peter’s Ice Cream launching an Australian native collection of the Connoisseur range<sup>19</sup>. The next generation are also increasing their awareness; for instance, Year 12 food technology and hospitality students from North Queensland’s Tully State High School prepared a four-course dinner for more than 200 guests to showcase indigenous foods grown in the school garden or wild-harvested from the local area with the

<sup>12</sup> Food Frontier, 2019, p.1, *Meat The Alternative: Australia’s \$3 Billion Opportunity*

<sup>13</sup> CSIRO, 2017, p.24, *Food and Agribusiness: A Roadmap for unlocking value-adding growth opportunities for Australia*

<sup>14</sup> M.C. Heller & G.A. Keoleian, 2014, *Beyond Meat’s Beyond Burger life cycle assessment: A detailed comparison between a plant-based and an animal-based protein source*, Michigan: Centre for Sustainable Systems, University of Michigan; viewed February 2020 <<http://css.umich.edu/publication/beyond-meats-beyond-burger-life-cycle-assessment-detailed-comparison-between-plant-based>>

<sup>15</sup> AgriFutures Australia, 2019, *The Changing Landscape of Protein Production: Opportunities and challenges for Australian agriculture*

<sup>16</sup> <https://business.financialpost.com/pmn/press-releases-pmn/business-wire-news-releases-pmn/merit-burcon-and-nestle-announce-collaborative-partnership-for-plant-based-protein-ingredients>

<sup>17</sup> ABC, 2019, *Australian bush tucker industry push to transform native foods for international consumption*, viewed February 2020 <<https://www.abc.net.au/news/2019-11-17/native-bush-foods-australian-bush-tucker-going-global/11658008>>

<sup>18</sup> ABC, 2019, *Indigenous community starts harvesting red bush apple that has high-end restaurants lining up*, viewed February 2020 <<https://www.abc.net.au/news/rural/2019-11-21/attica-restaurant-lines-up-for-taste-of-indigenous-bush-apple/11713876>>

<sup>19</sup> <http://www.connoisseuricecream.com.au/ranges/australian-native-collection/>



help of traditional owners<sup>20</sup>.

Indigenous foods have social, cultural and economic significance for Aboriginal and remote communities. In 2014, the Palngun Wurnangat Association in the Northern Territory invested in technology for handling and processing Kakadu plums, with 148 pickers, including many women, registered in 2015<sup>21</sup>. Enngonnia, in far western New South Wales, harvests bush tomatoes, munyeroo (a type of portulaca or pigweed) and marsdenia ('bush bananas')<sup>22</sup>. The community intends to expand its operations for producing these 'superfoods', providing much-needed employment and empowerment in this remote area.

Despite such developments, Bushfoods Sensations<sup>23</sup>, an alliance of businesses that promote indigenous Australian food, have found that only 1% of the industry's produce and revenue is generated by Aboriginal people<sup>24</sup>. To address this deficit, the University of Queensland (UQ) and the Australia Research Council's Training Centre for Uniquely Australian Foods is working in partnership with an Indigenous governance group to convert selected indigenous foods into branded products, focussing on technical information to support market development and legal arrangements<sup>25</sup>. Similarly, in 2019, First Hand Solutions partnered with the Indigenous Land and Sea Corporation and UTS Business School to present the inaugural National Indigenous Bush Food Symposium to share expertise and business strategies<sup>26</sup>.

With only around 18 native foods currently in commercial production (from roughly 6,400 varieties), and in the context of growing international demand<sup>27</sup>, the industry is lacking support in expanding its markets. According to ANFAB deputy chair, Russell Glover, there are skills shortages in working with the strict food safety regulations in order to commercialise indigenous bush food products. Meanwhile, the CRC for Remote Economic Participation is working to identify how national policies and institutions can support the meaningful inclusion of Aboriginal and Torres Strait Islander peoples in the commercialisation of their traditional plant foods<sup>28</sup>. They also point to skills needs, such as developing "species management plans that identify sustainable harvest yields and strategies to improve yields."

#### *Proposed Approach*

There may be no additional skills requirements, given the skills already available through the FBP and AHC Training Packages. Initial research into the skill needs of this industry has identified tasks involved, including propagation and growing; harvesting plants, seeds, leaves and fruit; identifying wild and farmed plants; preparing, treating, cooking; packaging, bottling, labelling food, possibly including meat. It is also important to maintain awareness of the potential to change the nature of products if processes such as planned cultivation, propagation or harvesting are introduced. Such techniques have already been introduced in relation to some indigenous foods.

The question as to whether there are skills not covered by available training remains open. The description of industry roles and job functions set to address the skills and knowledge required to work in this field requires further consultation with food processors, food organisations and Indigenous communities, and the examination of existing training to fully identify existing coverage.

This work is progressing and involves three different Industry Reference Committees: Food, Beverage and Pharmaceutical IRC, Agriculture and Production Horticulture IRC and Amenity Horticulture, Landscaping, Conservation and Land Management IRC. Additional IRC involvement (Meat or Aquaculture and Wild Catch) may be desirable. A Case for Change regarding indigenous bush foods may be submitted at a later time or in

<sup>20</sup> ABC, 2019, *Tully high school students grow, gather and serve up Deadly bush foods feast*, viewed February 2020 <<https://www.abc.net.au/news/2019-09-16/deadly-bush-foods-dinner-served-up-by-tully-students/11510554>>

<sup>21</sup> <http://www.uq.edu.au/research/impact/stories/the-tree-of-shelf-life/>

<sup>22</sup> ABC, 2019, *Remote disadvantaged community thriving thanks to native bush food it's cultivating*, viewed February 2020 <<https://www.abc.net.au/news/2018-06-15/native-bush-food-helping-remote-nsw-community-thrive/9870698>>

<sup>23</sup> <http://bushfoodsensations.net/>

<sup>24</sup> ABC, 2019, *Bush food industry booms, but only 1 per cent is produced by Indigenous people*, viewed February 2020 <<https://www.abc.net.au/news/rural/2019-01-19/low-indigenous-representation-in-bush-food-industry/10701986>>

<sup>25</sup> University of Queensland, 2020, *ARC Training Centre for Uniquely Australian Foods (2019–2024)*, viewed February 2020 <<https://researchers.uq.edu.au/research-project/35854>>

<sup>26</sup> <https://gunaikurnai.org/national-indigenous-bush-food-symposium-27-and-28-november-in-sydney/>

<sup>27</sup> ABC, 2019, *Australian bush tucker industry push to transform native foods for international consumption*, viewed February 2020 <<https://www.abc.net.au/news/2019-11-17/native-bush-foods-australian-bush-tucker-going-global/11658008>>

<sup>28</sup> CRC for Remote Economic Participation, *An inclusive governance framework for bush food commercialisation*, viewed February 2020 <[https://www.ipaustralia.gov.au/sites/default/files/submission\\_-\\_ninti\\_one.pdf?acsf\\_files\\_redirect](https://www.ipaustralia.gov.au/sites/default/files/submission_-_ninti_one.pdf?acsf_files_redirect)>

conjunction with the 2021 Annual Updates, if available qualifications, skill sets and units of competency are found to not adequately meet needs.

## Packaging

As reported in greater detail in the 2019 Skills Forecast, packaging and bottling play an important role in the manufacture of food, beverages and pharmaceutical products and in managing waste. There is a focus on innovation in packaging, that has moved beyond attractive design for marketing, into sustainable packaging that contributes to the growth of the circular economy.

During 2019 and into 2020, the Federal Government has been directly addressing the use and disposal of plastics, and other packaging issues are regularly reported. The Commonwealth Government has been consulting on the Product Stewardship Amendment (Packaging and Plastics) Bill 2019 which aims to make 100% of packaging reusable, recyclable or compostable by 2025 and sets a number of other ambitious targets. It also encourages phasing out, through design, innovation and introduction of alternatives to plastic packaging that is unnecessary or creates additional issues.

Other developments are likely as the Australian Packaging Covenant is updated and implemented. An emerging trend is that the decision-making responsibilities of workers in packaging plants may be changing, with a need to incorporate food safety decisions. This trend is being researched as it may result in the need to offer existing Units of Competency in additional qualifications.

### *Proposed approach*

Units of Competency in many food, beverage and pharmaceutical manufacturing qualifications address the skills in operating packaging and bottling systems and machinery, and current and proposed projects will alter available options. Over this year, the IRCs will be reviewing the qualifications, skill sets and units of competency available currently or as a result of current and future projects, to identify any potential skills gaps required to support further industry innovation. Materials and tools for the delivery and assessment of these units by training providers need to be updated to remain relevant to current work practices.

## Food waste

Reducing and managing food waste is described as one of the biggest environmental challenges of our time<sup>29</sup> and an important factor in growing the circular economy. In 2016-17, Australia produced 7.3 million tonnes of food waste across the supply and consumption chain. Of this, 2.5 million (34%) was created in our homes, 2.3 million tonnes (31%) in primary production and 1.8 million tonnes (25%) in the manufacturing sector<sup>30</sup>. The Government estimate this food waste to cost the Australian economy around \$20 billion each year<sup>31</sup>. Queensland commenced its waste levy in July 2019, and tools have been developed for organisations (including schools and businesses) to assist in minimising waste.

Packaging and bottling play an important role in managing food waste. Research has found supermarket food wastage rates can double when all its fruit and vegetables are delivered and sold without packaging, both as a result of shelf life reduction and damage in transit<sup>32</sup>. As most Australian consumers live in urban areas, far from where the food is grown, this creates significant practical challenges. Industry's answer is not to dispense with packaging but to develop *better* packaging. The packaging industry incentivises manufacturers through a range of initiatives and award schemes.

On a broader level, the food and beverage industry is beginning to consider beyond doing *less* harm to a circular economy that *eliminates* waste, whereby all by-products can be repurposed within a holistic system founded upon environmentally-friendly principles<sup>33</sup>.

### *Proposed approach*

The FBP IRC is seeking ways to incorporate food waste management and awareness into existing units to

<sup>29</sup> <https://www.foodmag.com.au/packaging-initiatives-designed-to-reduce-food-waste/>

<sup>30</sup> Australian Government, 2019, *Tackling Australia's food waste*, viewed February 2020 <<https://www.environment.gov.au/protection/waste-resource-recovery/food-waste>>

<sup>31</sup> Australian Government, 2017, *Working together to reduce food waste in Australia*, viewed January 2020, <<https://www.environment.gov.au/system/files/resources/29c0f94d-92ac-44d7-ac43-3051cff75162/files/food-waste-fact-sheet.pdf>>

<sup>32</sup> BBC, 2019, *How to solve the plastic packaging paradox*, viewed January 2020 <<https://www.bbc.com/news/business-47161379>>

<sup>33</sup> Ellen MacArthur Foundation, 2019, p.22, *Cities and Circular Economy for Food*, viewed February 2020 <[https://www.ellenmacarthurfoundation.org/assets/downloads/Cities-and-Circular-Economy-for-Food\\_280119.pdf](https://www.ellenmacarthurfoundation.org/assets/downloads/Cities-and-Circular-Economy-for-Food_280119.pdf)>

embed the skills, knowledge and attitudes industry will need at all levels to participate in the circular economy. This will be further looked at in the context of utilisation and duplication of products in the Training Package, and the incorporation of cross-sector units.

### Environmental Impacts

The FBP and PM IRCs have been in consultation with a number of other IRCs covering fields connected to food, beverage and pharmaceutical manufacturing either through the supply chain or that have a similar reliance on primary production.

In common with other IRCs, the FBP and PM IRCs have identified that changes to the Australian climate, which have led to the increasing severity of natural events, such as drought, bushfires and floods, are impacting on primary producers' ability to supply food, beverage and pharmaceutical processors and manufacturers. Potential impacts on these industries may include:

- Lack of availability of raw produce, including grains, vegetables and fruit, due to the direct impact of weather fluctuations and disasters.
- Severe loss of stock, both from direct impacts, including a lack of available feed, and the indirect impacts of meeting demand from depleted availability and planning for stock recovery.
- Severe loss of crops and diminished quality of available produce due to damage by pests and weather.
- Closure of services in regional, rural and remote areas that leads to the relocation of local populations and workforce
- Financial impacts due to loss of resources resulting in limited budgets for hiring and skilling the workforce.

An example of the extreme weather and climactic events is the impact on Australia's wine industry. Heatwaves in 2019 left producers concerned that leaves on their vines would droop, or even drop off, leaving grapes exposed to sunburn<sup>34</sup>. Drought is further challenging producers, leading some to adapt their viticultural methods in lieu of a consistent water supply<sup>35</sup>. According to news reports, bushfires have destroyed vineyards, including approximately one-third of vineyards in the Adelaide Hills region<sup>36</sup>, while grapes across Australia are increasingly at risk of being tainted by bushfire smoke<sup>37</sup>. Wine Australia have emphasised that only around 1% of Australia's total vineyard area has been affected by fires, but, together with "Australian Grape & Wine, the Australian Wine Research Institute and viticultural experts, and backed by the Federal Government, and state and regional wine agencies, are coordinating a response that will offer support and advice in the short-term and a longer-term action plan."<sup>38</sup>

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<sup>34</sup> *ibid.*

<sup>35</sup> The Guardian, 2019, 'It has been heart-wrenching': Australian farmers on living with drought, viewed January 2020  
<<https://www.theguardian.com/commentisfree/2019/nov/07/it-has-been-heart-wrenching-australian-farmers-on-living-with-drought>>

<sup>36</sup> ABC, 2019, *Bushfire devastates Adelaide Hills vineyards, with around one-third wiped out*, viewed January 2020  
<<https://www.abc.net.au/news/rural/2019-12-24/adelaide-hills-bushfire-destroys-one-third-of-vineyards/11824064>>

<sup>37</sup> The Guardian, 2019, *Australia's heatwave and bushfires create 'ominous' conditions for wine industry*, viewed January 2020  
<<https://www.theguardian.com/world/2019/dec/18/australias-heatwave-and-bushfires-create-ominous-conditions-for-wine-industry>>

<sup>38</sup> Wine Australia, 2020, *Bushfires draw Australian wine sector closer*, viewed February 2020  
<<https://www.wineaustralia.com/news/media-releases/bushfires-draw-australian-wine-sector-closer>>

# VET Qualifications & Employment Outcomes

The FBP and PM IRCs note the limitations on data available in response to VET qualifications and employment outcomes, and supports any moves to provide additional data whether collected by the NCVER or through other reliable means.

The most recent NCVER data<sup>39</sup> shows that, of FBP graduates:

- 45% of those not employed before training became employed after training.
- 16% of those employed before training became employed at a higher skill level after training.
- 82% of those employed after training received at least one job-related benefit.
- 55% of those employed after training were in the 'manufacturing' sector.

These statistics fail to identify whether the 85.1%<sup>40</sup> of learners who engaged in VET for employment-related reasons achieved those specific reasons, or received training that was fit for purpose. The definition of job-related benefit to cover any "job-related benefit after completing their training, including set up or expanded their own business, got a promotion, gained extra skills, increased earnings, or other job-related benefits"<sup>41</sup> is too broad to provide meaningful guidance.

The FBP and PM IRCs would like to see more analysis of the available data, with a view to extracting the greatest benefit from existing data, and to improving data collection for the future. In particular, there needs to be a greater focus on the experiences and benefits to students, and benefits to the community.

During consultation with the industries covered by the Food, Beverage and Pharmaceutical Training Package, stakeholders identified a range of reasons for hiring people with VET qualifications or skilling their workforce using Training Package components. These include:

- Regulatory requirements: For example, in some states and territories, food processing plants must have access to food safety auditors who have achieved the Food Safety Auditor Skill Set<sup>42</sup>.
- Indication of interest in the field: for example, during the development of the Certificate IV in Artisanal Food and Beverage Products, brewers, distillers, fermenters and cheesemakers spoke of seeking employees who demonstrated an interest in their field by having undertaken relevant vocational studies already.
- Workplace arrangements: For example, some larger factories utilise qualifications to form an important part of the conditions of employment as set out in workplace agreements.

The FBP and PM IRCs support further research, whether commissioned independently or through Skills Impact, to collect and present statistics and evidence around this issue, which is of relevance across all Training Packages.

## Specific Sector examples

### *High Volume Production Baking (Plant Baking)*

The Certificate III in Food Processing, including the elective unit options, meets the needs of many companies seeking accredited training for their staff, negating the requirement for units of competency specifically for the role of an operator in a factory producing bread and baked products. The majority of production bakeries consulted specifically on this issue do not seek arrangements through formal VET for worker development and do not see additional value in skills recognition outside of internal training arrangements.

<sup>39</sup> NCVER, 2019, *VET graduate outcomes*, viewed January 2020, <[https://va.ncver.edu.au/SASVisualAnalyticsViewer/VisualAnalyticsViewer\\_guest.jsp?reportName=VET%20graduate%20outcomes&reportPath=/Visual%20Analytics/NCVER/sos-student-outcomes-survey/Reports/3.Published&appSwitcherDisabled=true&commentsEnabled=false&reportViewOnly=true](https://va.ncver.edu.au/SASVisualAnalyticsViewer/VisualAnalyticsViewer_guest.jsp?reportName=VET%20graduate%20outcomes&reportPath=/Visual%20Analytics/NCVER/sos-student-outcomes-survey/Reports/3.Published&appSwitcherDisabled=true&commentsEnabled=false&reportViewOnly=true)>

<sup>40</sup> Productivity Commission Report on Government Services 2020, Part B, section 5

<sup>41</sup> Productivity Commission Report on Government Services, 2020, Part B section 5 at 5.19

<sup>42</sup> <https://training.gov.au/Training/Details/FBPSS00004>

### *Beer and Cheese*

The Certificate III in Food Processing is considered valuable by some employers when it has been packaged to address the skills needed in specific industries. For example, graduates of the Certificate III in Food Processing, who have selected the brewing-related electives units, have been successful in finding employment or expanding their capabilities in craft and independent breweries. Students of the same qualification who undertake the cheese-focused course at the Artisan Cheese Making Academy Australia have a high success rate in finding work associated with their learning soon after graduating: 29 out of the 30 recent graduates of this course are now working in cheese production facilities, start-up companies, as chefs or in retail roles.

### *Industrial Relations arrangements*

Several qualifications from the Food, Beverage and Pharmaceutical Training Package are included in a variety of workplace agreements that allow workers in food manufacturing sites to achieve formal qualifications for skills they learn at work. For example, a large wine manufacturer in the Riverina region of NSW has seven employees currently undertaking Certificate III in Wine Industry Operations through arrangements with TAFE NSW and a large confectionary factory in Melbourne is facilitating training and assessment towards Certificate III in Food Processing for operators who then progress through skill levels and associated pay rates.

### *Baking*

Bakers (ANZSCO 351111) are on the occupational skills shortage list<sup>43</sup>, due largely to employers reporting that they receive, on average, only 0.4 suitable applicants per job vacancy. As the occupational skills shortage research report details:

*The vast majority of employers sought qualified bakers and all required experience.*

- *Employers commonly required around two years of experience, and general skills in bread baking, including moulding and mixing.*
- *Some employers sought specialist skills in sourdough breads, hand moulding and different dough preparation techniques.*

With employment of “Bakers and Pastrycooks” (ANZSCO 3511) projected to grow by 6.4% by 2024, demand for people with baking qualifications<sup>44</sup> is likely to rise.

As is reflected in Census data on the highest level of educational attainment of people employed in the bakery product manufacturing industry, employers tend to hire staff who generally fit one of two profiles:

- The applicant is qualified to Certificate III-level and above (in 2017, the baking qualifications were reviewed and received major modifications to ensure that they meet industry standards); or
- The applicant does not possess a certificate in baking (hence the large number of people whose highest level of educational attainment is ‘secondary school’ in Figure 1), but, on acceptance of the job, are enrolled in a Certificate III under an on-the-job apprenticeship contract (subsidised by state funding) to ensure that they develop the required skills and knowledge (see Figure 2).

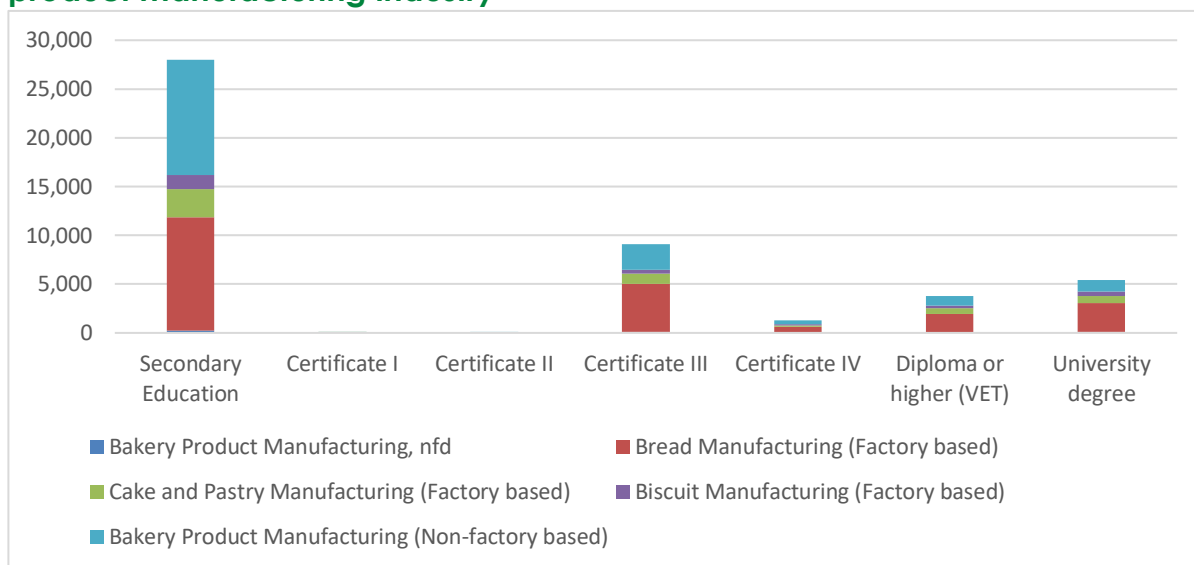
<sup>43</sup> Department of Education, Skills & Employment, 2018, *Baker*, Occupational skill shortages information, viewed February 2020 <[https://docs.employment.gov.au/system/files/doc/other/351111bakeraus\\_6.pdf](https://docs.employment.gov.au/system/files/doc/other/351111bakeraus_6.pdf)>

<sup>44</sup> “Baking qualifications” include the Certificate II in Baking, Certificate III in Baking, Certificate III in Bread Baking, Certificate III in Cake and Pastry, and Certificate IV in Baking.

Craft brewing is booming around Australia, and the few brewing vocational training courses on offer are always fully booked. Janie Butterworth from Beer Garden Brewing, considers the brewing course offered by TAFE SA an important step in her journey to commercial success. “The technical focus of the Certificate III means that we have the capability to produce award winning, world class beer in our beautiful but isolated part of the world”.

Another graduate of the same course, Lachy Mutton, Head Brewer and Owner of Little Rippa Brewing Company, said “The course helped me to produce more consistent products and expand my business to a commercial level operation.”

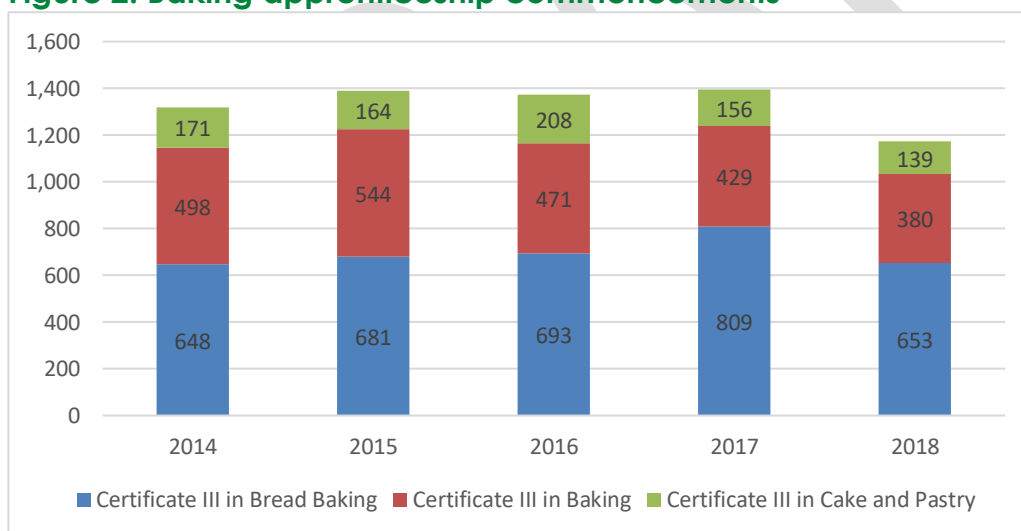
**Figure 1: Highest level of educational attainment of people employed in the bakery product manufacturing industry**



Source: 2016 Census TableBuilder - Employment, Income and Education

As discussed above, apprentice learners are enrolled at Certificate III-level (see Figure 2).

**Figure 2: Baking apprenticeship commencements**



Source: NCVET VOCSTATS, Apprentices and trainees - June 2019

The occupational skills shortage research report<sup>45</sup> states that “Commencements in relevant apprenticeships have been stagnant in recent years, suggesting that new training supply is unlikely to mitigate shortages in the short term.”

#### Food Safety Auditing

The Food Safety Auditor Skill Set, comprising four units of competency about food safety programs, audits and hazards, is an essential requirement for some staff in food businesses subject to Hazard Analysis and Critical

<sup>45</sup> Department of Education, Skills & Employment, 2018, *Baker*, Occupational skill shortages information, viewed February 2020 <[https://docs.employment.gov.au/system/files/doc/other/351111bakeraus\\_6.pdf](https://docs.employment.gov.au/system/files/doc/other/351111bakeraus_6.pdf)>

Control Points (HACCP) regulations. Food safety auditors conduct low risk safety audits on food preparation and food processing sites.

Due to differing funding availability for Skills Sets across the states, RTOs sometimes enrol candidates in the Certificate IV in Food Science and Technology as an alternative (funded) route for the learner to gain a Statement of Attainment covering the four units that comprise the Skill Set.

## Other Training Used by Employers

### Workplace Training outside of VET

Extensive training is undertaken outside of the nationally recognised accredited training system for the food, beverage and pharmaceutical manufacturing industry and is not usually acknowledged through a qualification or credential<sup>46</sup>. The extent of unaccredited training is unknown as it is not publicly recorded or consolidated<sup>47</sup>.

The last wide-scale national survey to report on training outside of the national system was the Australian Bureau of Statistics' 'Employer Training Expenditure and Practices', conducted in the financial year 2001-2002<sup>48</sup>. There is a compelling case to repeat this extensive survey. The FBP and PM IRCs support further research to collect and present statistics and evidence around this issue, which is of relevance across all Training Packages. Formal research of this type would seem to be outside the capabilities and funded work of the individual IRCs.

Smaller-scale research, such as NCVER's 2019 'Survey of Employers' Use and Views of the VET System', has found that around half of employers look beyond the VET system to deliver employee training, whether unaccredited (a program of structured training/instruction) or informal (on-the-job, unstructured training)<sup>49</sup>. Australian Industry Group's 'Workforce Development Needs Survey'<sup>50</sup> reports that the main approach to meeting skills needs used by employers is retraining existing staff on-the-job, and that there has been a significant increase in the strategy of employing workers with basic skills – often new entrants to an industry – and then upskilling them. The unaccredited or informal training that is delivered can also be used, purposefully or inadvertently, to complement and enhance employees' VET learning<sup>51</sup>.

NCVER<sup>52</sup> note that employers are less concerned about who provides training, and whether it is accredited, because they focus more on the perceived relevance of the training to meeting their needs. Mawer and Jackson<sup>53</sup>, for example, established that many employers are more comfortable and satisfied with unaccredited training, citing flexible structures, shorter durations, and a focus only on relevant equipment and workplace practices. In this light, NCVER<sup>54</sup> found that "employers have consistently rated satisfaction with unaccredited training significantly higher than with nationally recognised training and with the training to apprentices and trainees provided through the VET system".

The experiences of and feedback received by the FBP and PM IRCs would appear to be consistent with this research.

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<sup>46</sup> T. Griffin, 2016, *Costs and benefits of education and training for the economy, business and individuals*, NCVER, Adelaide, viewed January 2020, <<https://www.ncver.edu.au/publications/publications/all-publications/2873>>

<sup>47</sup> G. Moodie, A.L. Wheelahan, N. Fredman, & E. Bexley, 2015, *Towards a new approach to mid-level qualifications*, NCVER, Adelaide.

<sup>48</sup> Australian Bureau of Statistics, 2003, *6362.0 - Employer Training Expenditure and Practices, Australia, 2001-02*, viewed January 2020, <<https://www.abs.gov.au/Ausstats/abs@.nsf/0/00D5FE2BE9FCA5B1CA256CFB008083B0?Open>>

<sup>49</sup> NCVER 2019, *Australian vocational education and training statistics: employers' use and views of the VET system 2019*, NCVER, Adelaide.

<sup>50</sup> Australian Industry Group, 2018, *Workforce Development Needs Survey Report – Skilling: A National Imperative*, AIGroup, Adelaide, viewed January 2020, <[https://cdn.aigroup.com.au/Reports/2018/Survey\\_Report\\_WFDNeeds\\_Skilling\\_Sept2018.pdf](https://cdn.aigroup.com.au/Reports/2018/Survey_Report_WFDNeeds_Skilling_Sept2018.pdf)>

<sup>51</sup> I. White, N. De Silva & T. Rittie, 2018, *Unaccredited training: why employers use it and does it meet their needs?*, NCVER, Adelaide

<sup>52</sup> I. White, N. De Silva & T. Rittie, 2018, *Unaccredited training: why employers use it and does it meet their needs?*, NCVER, Adelaide

<sup>53</sup> G. Mawer & E. Jackson, 2005, *Training of existing workers: issues, incentives and models*, NCVER, Adelaide, viewed January 2020 <[https://www.ncver.edu.au/\\_\\_\\_data/assets/file/0014/5144/nr3017.pdf](https://www.ncver.edu.au/___data/assets/file/0014/5144/nr3017.pdf)>

<sup>54</sup> I. White, N. De Silva & T. Rittie, 2018, p.12, *Unaccredited training: why employers use it and does it meet their needs?*, NCVER, Adelaide

### Skills recognition and RPL

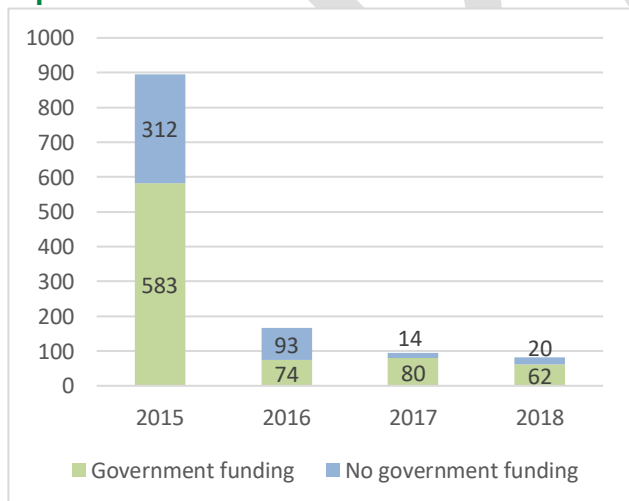
The process of acknowledging skills that have been learnt on-the-job and completing any relevant gap training to gain a qualification is reported by numerous stakeholders to have significant barriers. Training providers' systems and financial restrictions often mean that Recognition of Prior Learning (RPL) and Recognition of Current Competencies (RCC) is more expensive and laborious than attending classroom-based delivery and assessment activities, even for already-proficient learners. As a result of these barriers, the food and beverage manufacturing and the pharmaceutical manufacturing industries frequently choose non-formal and in-house training, without seeking to formally credential learning already undertaken.

The FBP and PM IRCs have no formal research to support this conclusion, but it is a recurring theme, and one that appears shared by other IRCs with which we have consulted.

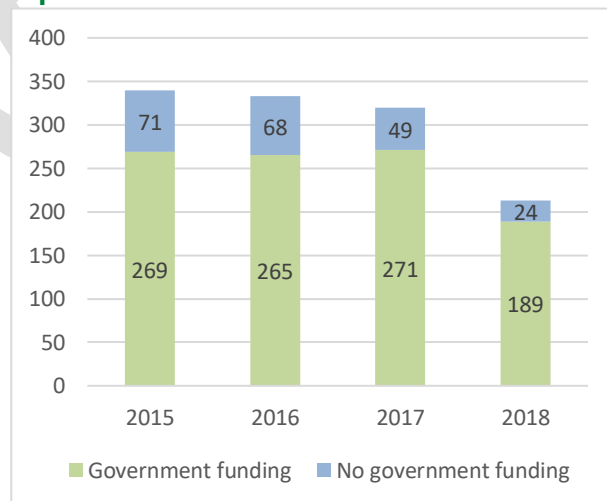
### Impact of funding on employers' choice of training and provider

The funding of vocational training delivery influences what packages RTOs offer to industry and, consequently, whether industry choose to engage with the VET system for their training needs. The impact of changeable funding is exemplified in South Australia's wine industry. In 2015 the South Australian state government offered "free" Certificate II-level courses, increasing the number of enrolments. Certificate II in Wine Industry Operations had previously been considered less likely to lead directly to a job in the wine industry than the Certificate III so had been less popular with employers although it was a cheaper option for people not currently in work. Free student fees at a time when the Certificate II was only a few units short of the Certificate III, meant that enrolments boomed. Once this funding arrangement was discontinued, enrolments at the Certificate II level fell back to the rates of the previous years and have largely remained stable since. According to information provided by a Senior Lecturer at TAFE SA based in the Barossa Valley, trainees and employees are often placed in Certificate III in Wine Industry Operations as it is "the entry level of choice for most employees because of the company's Enterprise Agreements or better incentives for trainees paid to the employer". During 2018-2019 this industry experienced a decrease in staff attrition and consolidation in some areas of wine production, employing less new employees and therefore enrolling less trainees in the Certificate III<sup>55</sup> (Figure 4). The Barossa Campus of TAFESA has reported that in 2019-2020, enrolments in the Certificate III in Wine Industry Operations.

**Figure 3: Certificate II in Wine Industry Operations enrolments in South Australia**



**Figure 4: Certificate III in Wine Industry Operations enrolments in South Australia**



Source: NCVET VOCSTATS, TVA program enrolments 2015-2018

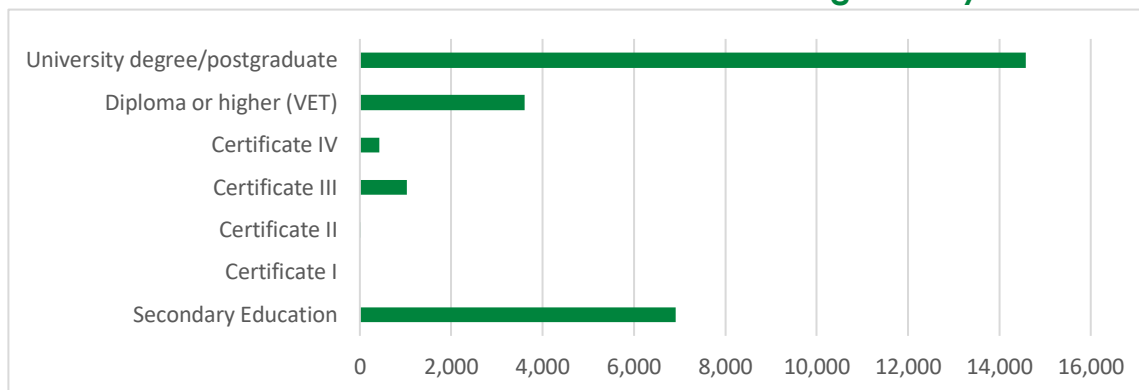
### Pharmaceutical manufacturing

Despite the skills required by operators within the pharmaceutical manufacturing industry aligning with AQF2 - AQF4 role descriptors (e.g. for machine operation, specialist products transportation and warehousing tasks), many factory workers in pharmaceutical manufacturing are university qualified or do not possess nationally recognised VET qualifications.

<sup>55</sup> Judi Brooks, Senior Lecturer, Primary Industries, Animal and Laboratory Sciences, Barossa Campus, TAFE SA



**Figure 5: Highest level of educational attainment of people employed in the Pharmaceutical and Medicinal Product Manufacturing industry**

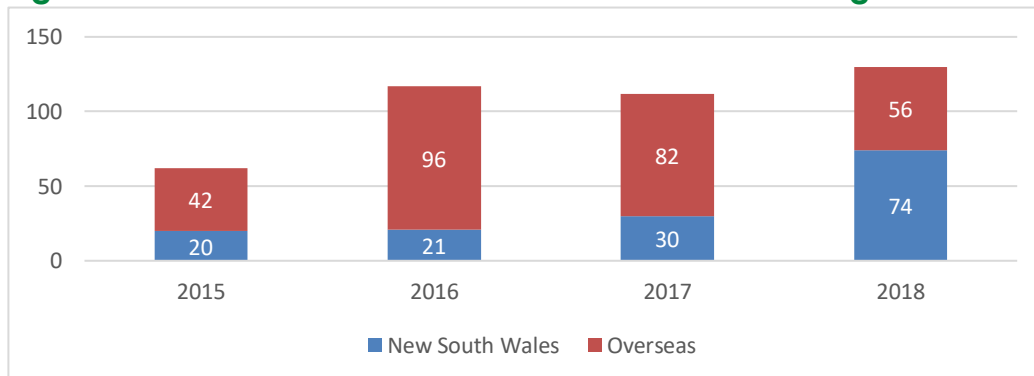


Source: 2016 Census TableBuilder - Employment, Income and Education

Pharmaceutical manufacturing is considered a thin training market, yet the industry employs over 23,000 workers<sup>56</sup> across more than 430 businesses<sup>57</sup>, which are concentrated in urban environments, and shows relatively high income compared with other FBP sectors<sup>58</sup>.

The Certificates II, III and IV in Pharmaceutical Manufacturing were updated and endorsed in 2018 to address the industry’s skill needs and regulatory requirements for manufacturing operators, including auditable evidence of ongoing competency, but there have been no enrolments in the Certificates II and IV between 2015 and 2018, and many of the Certificate III enrolments during this time have been in overseas delivery locations:

**Figure 6: Certificate III in Pharmaceutical Manufacturing enrolments**



Source: NCVER VOCSTATS, TVA program enrolments 2015-2018

In response, NCVER recently completed a pilot survey of pharmaceutical manufacturers in Australia to find out about their current (and anticipated) use of education and training. The survey asked respondents to define the level or type of training that is relevant to, or required for, jobs in their organisation. In the unpublished survey report, in-house and non-accredited training is described as widely used for staff, including for Good Manufacturing Practice (GMP), which is important for businesses’ compliance and regulation. This training is usually delivered in-house (by larger multi-national organisations) or by third party providers (such as

<sup>56</sup> Australian Bureau of Statistics, 2019, 6291.0.55.003 - EQ06 - Employed persons by Industry group of main job (ANZSIC), Sex, State and Territory, November 1984 onwards, viewed February 2020  
<https://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/6291.0.55.003Nov%202019?OpenDocument>

<sup>57</sup> Australian Bureau of Statistics, 2019, 8165.0 - Counts of Australian Businesses, including Entries and Exits, June 2014 to June 2018, viewed February 2020

<https://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/8165.0June%202014%20to%20June%202018?OpenDocument>

<sup>58</sup> IBISWorld, 2019, C1841 Pharmaceutical Product Manufacturing in Australia Industry Report

SeerPharma and PharmOut).

When asked to select the reasons why such education and training is required, most respondents state that it is for initial induction, ongoing professional development, regular refresher training and as a response to changes in the job roles or the industry itself. Most respondents report that they use non-accredited training due to its convenience and time flexibility. Other common reasons are that it is cost effective and that course content can be suitably tailored.

Industry stakeholders and IRC members have discussed the results of this research and note that, in some cases, businesses utilise FBP Training Package components to design and support training.

### **Flour milling**

The National Association of British and Irish Millers (NABIM)<sup>59</sup> offer an internationally recognised, relevant qualification that addresses the skills needs of leading hands and technical millers within the flour milling industry in Australia. Stakeholder engagement has revealed that this is the preferred qualification within the industry as it is well-established and continually evolving to keep pace with technology innovations. The Certificate IV in Flour Milling is not used.

The Australian Technical Millers Association (ATMA) facilitate the NABIM training across Australia, New Zealand and the Pacific as a distance learning program<sup>60</sup>. They support this course through administrative tasks such as enrolments and the provision of materials, tutors and an award system, as well as supporting on-site coordinators and mentors to support learners. ATMA have also introduced complementary online sessions with their industry trainers in NABIM's virtual flour mill<sup>61</sup>, which is offered to every student.

ATMA have also partnered with the Australian Export Grains Innovation Centre (AEGIC) to provide practical, hands-on experiences for learners to gain skills and knowledge in operating, maintaining and troubleshooting equipment, implementing processes, adjusting equipment and operating safely<sup>62</sup>.

### **Stock feed milling**

The Stock Feed Manufacturing Council of Australia (SFMCA) and The University of Queensland have developed a training program for Advanced Feed Milling<sup>63</sup>. This course is delivered to millers entirely online and assessment is supported by workplace assessment activities. The six modules that comprise this course were developed internally and do not align with the FBP Training Package units of competency addressing grain milling skills. The modules include introduction to stock feed milling, ingredient receipt, handling and storage, particle size reduction, weighing, batching and mixing, pelleting, finished feed handling, storage and delivery.

The Stock Feed Manufacturing Council of Australia is now working with Skills Impact to develop a specialist stream within the Food Processing qualifications.

### **Brewing and distilling**

Similar to the grain milling industry, brewers and distillers in Australia recognise a British correspondence course as the most relevant qualification for their industry. The Institute of Brewing and Distilling (IBD)<sup>64</sup> have been delivering short foundation courses, longer certificates and diplomas in partnership with brewers and major brewing companies in Australia. These qualifications are well respected by industry, however they are considered to be mostly theoretical and do not align with the national education system.

The newly endorsed Certificate IV in Artisan Fermented Products within the Food, Beverage and Pharmaceutical Training Package will enable training providers to offer an Australian qualification while aligning some of the learning outcomes with those of the IBD programs.

<sup>59</sup> NABIM, 2020, *Training*, viewed February 2020 <<http://www.nabim.org.uk/training>>

<sup>60</sup> Australian Technical Millers Association, 2020, *Nabim Distance Learning Course*, viewed February 2020 <<https://www.atma.asn.au/nabim-distance-learning>>

<sup>61</sup> NABIM, 2020, *Virtual Flour Mill*, viewed February 2020 <<http://www.nabim.org.uk/virtual-flour-mill>>

<sup>62</sup> ATMA, 2020, *Training: Hands on Learning*, viewed February 2020

<<https://www.atma.asn.au/Default.aspx?PageID=18271235&A=SearchResult&SearchID=4869543&ObjectID=18271235&ObjectType=1>>

<sup>63</sup> The University of Queensland, 2020, *Stock Feed Manufacturing Council of Australia Training*, viewed February 2020 <<https://skills-training.uq.edu.au/programs/stock-feed-manufacturing-council-australia-training>>

<sup>64</sup> Institute of Brewing and Distilling, 2020, *Brewing qualifications*, viewed February 2020 <<https://www.ibd.org.uk/learn/study/brewing/>>

## Professional development for the food and beverage manufacturing industry

Professional development webinars, conferences and training courses are provided for industry staff, process workers and students through a network of associations and private education providers; for example:

- The Australian Institute of Food Science and Technology (AIFST) delivers a suite of monthly technical and professional development webinars and an annual summer school<sup>65</sup>.
- The Australian Institute of Packaging (AIP) delivers courses labelled as Certificates and Diplomas that do not align with the national system. The AIP has also partnered with the University of Melbourne to offer a Master of Food and Packaging Innovation<sup>66</sup>.

Many organisations provide professional development for staff by training consultants and also equipment-specific training from equipment suppliers. For example, when providing equipment to pharmaceutical manufacturers, GE Healthcare LifeSciences sends trainers into manufacturing plants to teach operators how to operate it. This on-site training is usually offered as part of the conditions of the purchase and is considered an important method for ensuring factory operators are sufficiently skilled to perform their jobs.

## In-house training using FBP Training Package products

Many food, beverage and pharmaceutical processors and manufacturers, especially larger organisations, have training teams delivering internally validated training programs for staff and factory operators. These include formalised structures reflected in industrial agreements and informal peer-to-peer training of new workers. For example, there are currently no RTOs delivering either the Certificate II or III in Sugar Milling Industry Operations but much of the industry uses the units of competency to develop operational training competencies. The Queensland University of Technology (QUT) and Sugar Research Institute (SRI) are collaborating on a project using Training Package components to develop online training programs for the industry. All Australian milling companies have access to these programs and are actively using these for staff training.

## Other uses for FBP Training Package products

The FBP and PM IRCs note that all modern awards have levels directly connected to the job roles and functions described in the qualifications and units of competencies available in Training packages. The United Workers Union (previously the National Union of Workers and United Voice) uses FBP Training Package qualifications to help determine salary rates for members; for example, when they are perceived to be performing processing and production tasks at a higher level than their Award rate. Individuals' job descriptions are equated to particular qualifications, the AQF level of which is thought to align with an Award rate. As such, FBP Training Package products act as reference points for benchmarking the tasks, skills and competencies of food workers.

# Enrolment Levels

## Systemic challenges causing low/no enrolments

The FBP and PM IRCs face competing priorities regarding the standards that govern their activities and the minister's objective to delete qualifications with low/no enrolments. The IRCs are required to support "nationally consistent qualifications that reflect the skills and knowledge required to successfully operate in a particular occupation", while training products must reflect "occupational skills needs of an industry, or a group of industries, to facilitate employment and vocational outcomes for individuals"<sup>67</sup> Thus, the IRCs' roles are to engage with industry to describe current (and future) occupational skills standards, and *not* to ensure formal RTO enrolments within the VET system.

New units are developed to meet new ways for working but, at the same time, it is not advisable to delete units that describe older methods of work that are still in use which cannot be incorporated into the new ways of working. RTOs choose to deliver units based on viability, local markets and the availability of appropriate people and resources to deliver the unit. As a result, many units are underutilised despite reflecting current skills within

<sup>65</sup> Australian Institute of Food Science and Technology, 2020, *Upcoming AIFST Events*, viewed February 2020 <<https://www.aifst.asn.au/events>>

<sup>66</sup> Australian Institute of Packaging, 2020, *AIP Education Overview*, viewed February 2020 <<http://aipack.com.au/education/aip-education-overview/>>

<sup>67</sup> Australian Industry and Skills Committee, 2019, pps.4-5, *Industry Reference Committees: Operating Framework for the Development of Training Packages*, viewed February 2020, <[https://www.aisc.net.au/sites/default/files/documents/IRC%20Operating%20Framework%20-%20201912\\_0.pdf](https://www.aisc.net.au/sites/default/files/documents/IRC%20Operating%20Framework%20-%20201912_0.pdf)>

industry. The FBP and PM IRCs believe that low levels of unit or qualification delivery may be signalling that the system places unreasonable demands upon RTOs to deliver training in areas for which they do not have the resources. Feedback from the implementation of updated baking qualifications is consistent with this conclusion.

Representatives of the FBP and PM IRCs have discussed these issues with representatives from other IRCs, and acknowledge that there are several shared themes that have been emerging from those discussions. In the case of the FBP and PM IRCs, feedback from employers, industry participants, members' associations and other stakeholders indicate that general reasons for low and no enrolments include:

- RTO delivery issues, and the lack of available, fully qualified assessors, especially in the pharmaceutical manufacturing sector
- RTOs struggle to afford the simultaneous expenses of assessment and training materials, hiring trainers with industry currency, maintaining regulatory compliance, dispersed workplace visits and significant capital expenditure.
- Employer and learner inability to access supported training through funded apprenticeships and traineeships, as well as other potential support, given the changing structures of the industry and the nature of work within the industry: Many participants are sole traders operating on a fee for service model working for multiple clients across jurisdictions, which is not consistent with supervised learning models currently offered..
- The use of non-accredited training (as detailed in question 3), usually to address delivery issues, enable timely, tailored upskilling of industry participants and avoid navigating the complexities of the Recognition of Prior Learning process.
- Prior to recent updates, several FBP qualifications were considered by industry to be outdated. Where there are new, superseding qualifications, there is an enrolment lag as RTOs develop training and assessment strategies and materials and seek approval to have it on scope (as discussed below).
- An industry-wide inability to attract new (especially younger) participant workers to the food and beverage manufacturing positions. Around 28% of industry employees is over the age of 50<sup>68</sup>.

Anecdotally, state funding priorities seem to be creating an artificial market for enrolments because employers are enrolling trainees in higher-funded qualifications, even where they may not be the best fit for the learner and their intended job role. The availability of qualification funding appears to be a decision point for businesses, as illustrated in the Certificate II/III Wine Industry Operations example (see Part 2).

### **FBP Training Package products that should be retained and rationale for retention**

*Please note, all enrolment figures below are inclusive of the current and any superseded versions of qualifications where there is data provided by NCVET. This is to more accurately assess demand for, and uptake of, a particular occupational skill need.*

#### **Qualifications that are used by industry outside of VET**

Several stakeholders from the food, beverage and pharmaceutical industries use Training Package products for a variety of purposes outside of the national system. These include using qualifications as descriptors of job roles for developing position descriptions, for guiding internal training and professional development programs and external, non-accredited training programs for industry (but not delivered or assessed by Registered Training Organisations).

The Sugar Milling qualifications are not formally delivered or assessed by any RTO but are widely used by sugar mills to develop training and define skills requirements for various operational roles. Queensland University of Technology (QUT) and the Sugar Research Institute (SRI) are currently collaborating on the development of online training programs for the sugar industry. Over the next three years, this project, funded by Sugar Research Australia, will develop an Australian Sugar Industry Training Learning Management System<sup>69</sup> using seven units of competency from the Certificate II in Sugar Milling Support. All Australian sugar milling companies have access to this Learning Management System and many are currently using it for staff training.

As the newly-reviewed Certificate II in Sugar Milling Support was released in December 2018, it is considered

<sup>68</sup> Australian Bureau of Statistics, 2016, Census TableBuilder - Employment, Income and Education

<sup>69</sup> <https://www.assct.com.au/my-downloads/24-to-32-m-03-moller-and-king-pdf?tmpl=component>

to be reflective of current industry practices and occupations.

**Table 1: Sugar Milling enrolments**

Current Qualification	Enrolments			
	2015	2016	2017	2018
FBP20618- Certificate II in Sugar Milling Support	0	0	0	0
FBP31018- Certificate III in Sugar Milling Industry Operations	0	0	0	0

Source: NCVET VOCSTATS, TVA program enrolments 2015-2018

**Qualifications recently reviewed/updated**

Several FBP qualifications with few or no enrolments over the past four years have recently been reviewed and redeveloped. Demand may reasonably be expected to rise when a qualification has been significantly updated to meet industry needs (as defined through extensive consultation).

The Certificate IV in Food Science and Technology was reviewed and redeveloped in December 2018 and, as such, is considered to be reflective of current industry practices and occupations. Feedback received during the project, support and endorsement process indicates that this qualification is likely to attract a wider audience over the next few years and that businesses will be seeking employees with this qualification when graduates become available.

**Table 2: Certificate IV in Food Science and Technology**

Current Qualification	Enrolments				Release 1 Current Qualification	RTOs approved to deliver (as at Jan '20)
	2015	2016	2017	2018		
FBP40418- Certificate IV in Food Science and Technology	95	144	107	104	18/12/2018	5

Source: NCVET VOCSTATS, TVA program enrolments 2015-2018

**Qualification newly transitioned from another Training Package**

The Certificate III in Rice Processing was transitioned from the superseded 'ZRG00 - Ricegrowers' Cooperative Limited' Training Package and was released, in a redeveloped format, in January 2018. as such, it considered to be reflective of current industry practices and occupations. The FBP IRC advises that it can take up to two years for RTOs to develop training and assessment materials and get a new qualification on scope. NCVET data currently covers enrolments up to the end of 2018 and, as such, any qualification that has transitioned across Training Packages, and was released after January 2017, cannot yet be assessed as 'low enrolment' because there has not been sufficient time to analyse RTO/industry supply and demand.

**Table 3: Certificate III in Rice Processing**

Current Qualification	Enrolments				Release 1 Current Qualification
	2015	2016	2017	2018	
FBP30717- Certificate III in Rice Processing	0	0	0	0	23/01/2018

**Low industry demand at present, but future opportunities**

The pharmaceutical manufacturing industry in Australia tends not to facilitate formal engagement with VET qualifications. The majority of training for the Certificate III in Pharmaceutical Manufacturing is delivered by Box Hill TAFE to learners employed by two pharmaceutical factories in China. These manufacturers seek out Australian qualifications because they are respected internationally and are markers of quality when these companies reach into European, Australian and American markets. However, there has been no such interest in the Certificates II and IV in Pharmaceutical Manufacturing as yet.

**Table 4: Pharmaceutical Manufacturing enrolments**

Current Qualification	Enrolments				Release 1 Current Qual
	2015	2016	2017	2018	
FBP20418- Certificate II in Pharmaceutical Manufacturing	0	0	0	0	18/12/2018
FBP30818- Certificate III in Pharmaceutical Manufacturing	66	109	117	132	18/12/2018
FBP40518- Certificate IV in Pharmaceutical Manufacturing	0	0	0	0	18/12/2018

Source: NCVER VOCSTATS, TVA program enrolments 2015-2018

Redeveloped versions of the Certificates II and IV in Pharmaceutical Manufacturing were released in December 2018 and, as such, are considered to be reflective of current industry practices and occupations. While the pharmaceutical manufacturing industry has been slow to engage with the VET system, preferring instead to recruit factory floor operators from the available pool of university graduates, NCVER’s recent pilot survey of Australian pharmaceutical manufacturers’ current (and anticipated) use of education and training demonstrates the relevance of – and opportunities for – the FBP Training Package.

The survey asked respondents to define the level or type of training that was relevant to, or required for, jobs in their organisation (see Table 5). VET qualifications were relevant to machine operators and other manufacturing staff, assistants, maintenance staff, and trades workers (e.g. electricians and fitters). Apprenticeships and traineeships were also applicable to maintenance staff and trades workers. Employers also confirmed that VET has been arranged for first aid and workplace health and safety needs.

**Table 5: Jobs by the level or type of training that is relevant or required**

Level or type of training	Jobs
VET certificate (level I or II)	Operator
VET certificate (level III or IV)	Operator (two) Electricians Fitters Laboratory assistants Maintenance staff
VET diploma or above	Manufacturing staff Operator Quality control
Apprenticeship or traineeship	Maintenance staff (two) Electricians Fitters

Source: NCVET, Report on the pilot survey of pharmaceutical manufacturers (unpublished)

Pharmaceutical industry stakeholder consultation indicates that formal training for unqualified manufacturing operators is under consideration as the skills required by the industry become increasingly more complex and digitally mediated. Employment in 'Pharmaceutical and Medicinal Product Manufacturing' is expected to grow 11.3% (2,600) by May 2024<sup>70</sup> and, with new entrants also replacing out-going workers, there is anticipated potential for FBP qualifications to gain more enrollees.

Overall, pharmaceutical manufacturing training and assessment faces significant challenges posed by the current vocational skills, learning and accreditation system. In particular, low enrolments in relevant qualifications is often seen as an indicator of a lack of requirement for training, but industry does have clear and mandated requirements for training. Barriers to market entry for independent RTOs to deliver these qualifications include problems with obtaining qualified trainers and assessors, and the focus of programs promoting careers in Science, Technology, Engineering and Mathematics encouraging entry to university programs, to the detriment of the VET sector.

#### **ACM Training Package products that potentially should be deleted (low enrolment or otherwise)**

##### **Food Processing (Sales)**

A project to review the Certificates II and III in Food Processing (Sales) (in addition to the Certificates I, II and III in Food Processing) is on-going at the time of reporting. These Certificate III does not show low enrolments and the Certificate II shows moderate levels in 2015, but low enrolments since then, yet feedback is indicating that the skills and knowledge which are considered to be reflective of current industry practices and occupations, would be better served by being specialisations within the Certificates II and III in Food Processing. If, through consultation, this position is supported, the Certificates II and III in Food Processing (Sales) would potentially be deleted.

<sup>70</sup> Labour Market Information Portal, 2019, Occupational & Industry Projections - five years to May 2024

**Table 6: Food Processing (Sales) enrolments**

Current Qualification	Enrolments				Release 1 Current Qualification
	2015	2016	2017	2018	
FBP30617- Certificate III in Food Processing (Sales)	371	318	151	132	23/01/2018
FBP20317- Certificate II in Food Processing (Sales)	261	25	36	20	23/01/2018

Source: NCVER VOCSTATS, TVA program enrolments 2015-2018

### Flour Milling

Representatives of the flour milling industry have provided information that the current Certificate IV in Flour Milling does not reflect the skills currently required by technical millers<sup>71</sup>. The British distance-learning course is preferred and recognised as the most relevant qualification for workers in this field (as discussed in Part 3). The existing qualification (released 2018) was only updated to meet the new Training Package standards and incorporate changes to imported units, and has not been fully reviewed since 2012.

A complete review of this qualification, and possible deletion, has been proposed in the schedule of work for 2020-2021.

**Table 7: Certificate IV in Flour Milling enrolments**

Current Qualification	Enrolments				Release 1 Current Qualification
	2015	2016	2017	2018	
FBP40117- Certificate IV in Flour Milling	3	0	0	0	23/01/2018

Source: NCVER VOCSTATS, TVA program enrolments 2015-2018

### High Volume Production Baking (Plant Baking)

The Certificate III in Plant Baking is generally seen to be an extension of food processing, hence most organisations engaged in accredited training focus on the Certificate III in Food Processing. Many of the specific units in that qualification are seen to be out of date and not useful for current bread, biscuit and cake manufacturing plants. The existing qualification (released 2018) was only updated to meet the new Training Package standards and incorporate changes to imported units, and has not been fully reviewed since 2011.

A complete review of this qualification, and possible deletion have been proposed in the schedule of work for 2020-2021.

**Table 8: Certificate III in Plant Baking enrolments**

Current Qualification	Enrolments				Release 1 Current Qualification
	2015	2016	2017	2018	
FBP30217- Certificate III in Plant Baking	34	34	27	2	23/01/2018

Source: NCVER VOCSTATS, TVA program enrolments 2015-2018

<sup>71</sup> Australian Technical Millers Association response at Food Processing Review project SME workshop



# Reasons for Non-Completion

## Reasons for non-completion

Based on the limited available NCVER research, there is an apparent contradiction between the relatively low completion rates of qualifications and high rates of satisfaction with training. Specifically, research may be required to establish the true extent of course non-completion issues<sup>72</sup>. Current data suggests low 'success' rates in the FBP Training Package, with a completion rate of 54.8% as at 2017<sup>73</sup>, yet 86.2% of FBP students were 'satisfied with the overall quality of training' and 72.4% 'achieved their main reason for training'<sup>74, 75</sup>. While there are many reasons for students not completing qualifications besides dissatisfaction with their training, current surveys and research do not look beyond a student's personal circumstances or opinions.

The achievement of one or more units of competency is a regulatory requirement in some industries that involve chemical handling, pest control, food safety, and other tickets or licences that allow workers to undertake tasks or operate specific equipment. Gina Dal Santo, lecturer and cheesemaker at the Artisan Cheese Making Academy Australia, has confirmed that a number of students complete only the units they want for enhancing their current work skills before cancelling their training contract. The IRCs recommend that, given this anecdotal evidence, this topic should be explored further, for non-completions are clearly a far more complex issue than is implied by the completion rates alone.

Stakeholders have commented extensively on how different state and territory funding models affect enrolments; for example, because skills sets are not funded, learners who want a limited number of unit competencies may be enrolled in funded qualifications but will cancel their training contract after achieving these (the system then shows them as cancellations when they are in fact satisfied customers with enhanced job outcomes).

An emerging issue reported by other IRCs concerns imported and cross-sector units causing irrelevant learning to be undertaken. In designing qualifications, the FBP and PM IRCs encourage the importation of units from other Training Packages to avoid duplication. Feedback from learners and RTOs as reported by other IRCs is that this may result in additional classroom or online training with too much content that is not, or cannot be, contextualised to the learners' intended job roles through the training delivery. This is reported to demotivate learners and result in higher cancellation rates, failed assessments and poor RTO feedback. This issue has not been identified by the FBP and PM IRCs within the Training Package as yet, however this topic will be included in exploratory consultations during the next year.

### *Proposed approach*

More research may be required to explore systemic issues. The FBP and PM IRCs suggest that they do not have access to the level of detailed non-completions information and data to which the AISC may have access. NCVER have released reports<sup>76</sup> which detail reasons for non-completion, but they do not provide detail to the level of individual Training Packages. While more research may be required to explore reasons for qualification non-completion, given the statistically significant numbers, this seems to be out of scope for the FBP and PM IRCs. In any event, the IRCs have no access to those learners who do not complete programs, other than in particular circumstances, and this research cohort would be exceptionally difficult for the IRCs to identify and contact for research purposes, given limited time and available resources.

## Purpose for completing qualifications and skill sets

The FBP and PM IRCs do not have access to RTO-submitted AVETMISS data that would allow it to track FBP enrollees' 'study reason' and collate statistics on those who complete qualifications or skills sets. It can, however, access NCVER's 'VET graduate outcomes' data visualisation tool, which uses data sourced from the National Student Outcomes Survey (which, by its nature, collects data on students' retrospective reflections).

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<sup>72</sup> Building on work by NCVER, such as: A. Bednarz, 2014, Understanding *the non-completion of apprentices*, NCVER, Adelaide.

<sup>73</sup> NCVER, private data request

<sup>74</sup> Including all National Student Outcomes Survey respondents who completed at least one subject, whether they completed their qualification or not.

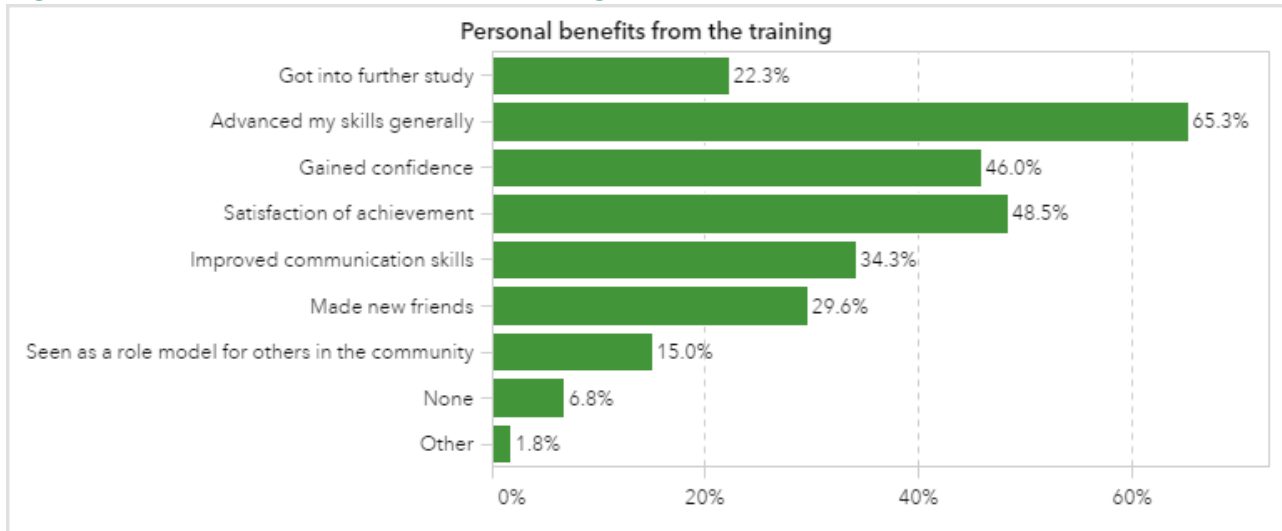
<sup>75</sup> NCVER, 2019, *VET graduate outcomes*, SAS Visual Analytics

<sup>76</sup> NCVER, 2019, p.15, *Apprentice and trainee experience and destinations 2019*, viewed January 2020

<[https://www.ncver.edu.au/\\_\\_data/assets/pdf\\_file/0037/8379181/Apprentice\\_and\\_trainee\\_experience\\_and\\_destinations\\_2019.pdf](https://www.ncver.edu.au/__data/assets/pdf_file/0037/8379181/Apprentice_and_trainee_experience_and_destinations_2019.pdf)>

Of FBP graduates, 83.9% achieved their main reason for training (although 'reasons for study' are undefined). Graduates perceived personal benefits after their training, including:

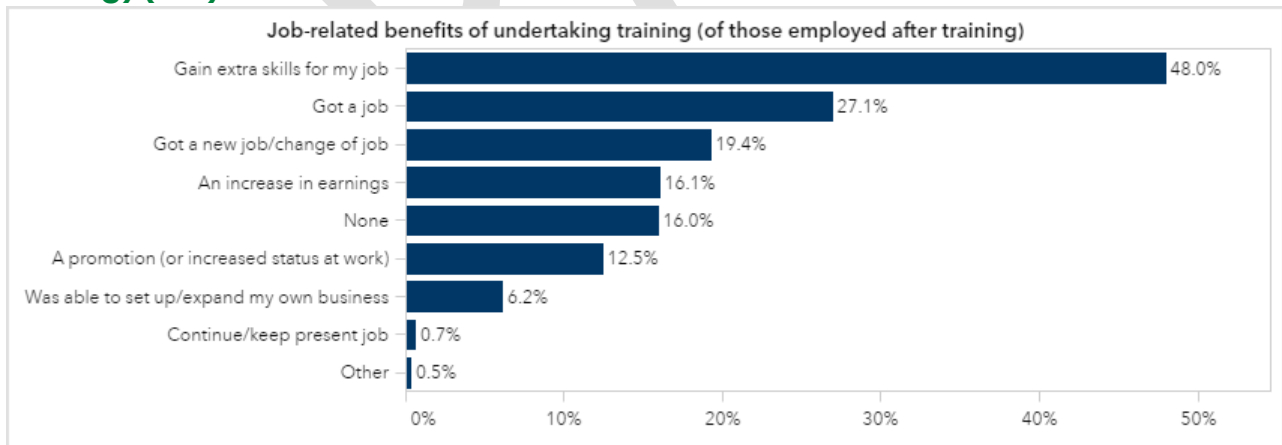
**Figure 7: Personal benefits from training (FBP)**



Source: NCVET, VET graduate outcomes

Current data does not allow for an appropriate correlation between the job-related benefits being sought and the job-related benefits being gained. The job-related benefits of undertaking training, which has a limitation of those employed after training, were perceived by FBP graduates as gaining extra job skills, getting a job or changing jobs, increasing earnings and getting promotions:

**Figure 8: Job-related benefits of undertaking training (of those employed after training) (FBP)**



Source: NCVET, VET graduate outcomes

Despite recent improvements in NCVET data<sup>77</sup>, there are many areas in which a higher level of detail would facilitate more nuanced analyses. For example, future data releases on graduates could include data so that they can be assessed according to variables such as their Training Package qualification and 'student remoteness region' to allow comparison of outcomes in major cities, regional and remote areas.

<sup>77</sup> COAG Standing Council on Tertiary Education, Skills and Employment (SCOTSE) agreed to the introduction of mandatory reporting of nationally recognised training activity from 2014 onwards. Under this mandatory reporting, all Australian training providers (excluding those exempted by regulators) delivering nationally recognised training to students, either in domestic or in overseas locations, are required to report their training activity to NCVET.

As described above, several skill sets satisfy regulatory requirements. Completion of the Food Safety Auditor Skill Set authorises graduates to work in a HACCP team or as a food safety auditor. The units in the skill set are a requirement for companies supplying several major supermarkets, which are audited against the Global Food Safety Initiative<sup>78, 79</sup>. The Milk Tanker Operator Skill Set (FBPSS00005) is recognised as a key skill requirement for Milk Tanker drivers working nationally within the dairy industry.

Several large manufacturers, including those in the confectionary, food processing and wine operations industries, have embedded units of competency and qualifications into their industrial agreements. Workers access formal VET training and assessment onsite and, once they achieve groupings of units or a qualification, can be promoted to higher levels workplace positions and pay grades<sup>80</sup>.

## Cross-Sector Units

Cross-sector units are not currently applied within qualifications that are part of the Food, Beverage and Pharmaceutical Training Package. During the course of the activities identified in Section C of this report, the potential for using cross-sector units will be investigated.

As reported in the FBP Skills Forecasts 2019 – 2022, the FBP and PM IRCs intend to commence a review of duplications and opportunities for incorporation of cross-sector and innovation units across the Training Package. The focus for the IRCs to this point has been meeting industry needs for updated skills through qualifications, skill sets and units of competency. As the Training Package will be almost completely updated by the end of 2021, opportunities will be undertaken to re-examine the whole Training Package using the new tools that have been provided by the AISC.

## Changes to Skill Requirements

The FBP and PM IRCs reported in the Skills Forecast 2019 – 2022 that a review of the qualifications relating to Flour Milling and High Volume Production Baking (Plant Baking) should occur during 2020 – 2021 and this priority has not changed. While the projects should go ahead, the IRCs are currently considering the merits of incorporating this work into the current project work relating to the Food Processing qualifications. The IRCs are balancing industry need for qualifications with the substantial disruption that could occur if the projects were not combined.

As noted in part 1, digital technologies in the food, beverage and pharmaceutical manufacture industries are changing the nature of work and workers' skills<sup>81</sup>. Digital tools – and requisite levels of digital literacy for their operation – are required in food and pharmaceutical manufacturing to meet the challenges of increasing demand for information about food provenance and traceability, personalised products and supply chain management and regulations<sup>82</sup>. Developing knowledge and skills for operating digital systems, equipment and processes has filtered down from research and development scientists to managers and supervisors to the factory floor where packers, forklift drivers and process-line operators are required to operate screen-based interfaces, extract and interpret digital reports and troubleshoot computerised equipment<sup>83, 84, 85</sup>.

As far as possible, the FBP and PM IRCs are working to ensure the required changes are incorporated into current reviews and attempting to combine currently utilised skills approaches with equivalent digital approaches, where possible. However, the FBP and PM IRCs also note that in preparing the Australian

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<sup>78</sup> <https://mygfsi.com/>

<sup>79</sup> <https://exemplarglobal.org/certification/food-safety-systems/national-food-safety-auditor-nfsa/>

<sup>80</sup> Get data from AMWU? Nestle? Yalumba?

<sup>81</sup> CSIRO, 2016, *Advanced Manufacturing: A Roadmap for unlocking future growth opportunities for Australia*

<sup>82</sup> CSIRO, 2017, *Food and Agribusiness: A Roadmap for unlocking value-adding growth opportunities for Australia*

<sup>83</sup> <https://web.luxresearchinc.com/hubfs/Press%20Release%20Assets/Lux%20Research%20-%20The%20Digital%20Transformation%20of%20the%20Food%20Industry.pdf>

<sup>84</sup> <https://www.complexica.com/news/pernod-ricard-winemakers-selects-complexica-for-artificial-intelligence-project-to-digitise-and-globally-optimize-supply-chain-operations>

<sup>85</sup> <https://pacetoday.com.au/overtaking-industry-4-0-coming-cobots/>

workforce for the digital future (and present), researchers recommend that manufacturers facilitate digital skills training<sup>86</sup>. Stakeholder engagement, including with food processing employers, pharmaceutical manufacturers and union representatives, points to a general lack of preparedness, with near-constant upskilling requirements in order to manage and work in a food or beverage factory with computerised equipment and complex supply chain systems and regulations.

As also noted in Part 1, the FBP IRC will continue to undertake consultations relating to alternative proteins, bush foods, packaging and food waste, however Cases for Change will not be submitted at this time. The work to holistically re-examine the Training Package for duplications, and opportunities for incorporation of cross-sector and innovation units will also commence this year.

## Apprenticeship and Traineeship Barriers

The utilisation of apprenticeships and traineeships in the FBP Training Package are decreasing (see Figure 9). Feedback received by the FBP and PM IRCs suggests that employers find them to be increasingly unviable.

**Figure 9: FBP apprenticeship commencements**



Source: NCVET VOCSTATS: Apprentices and trainees

There are many reasons contributing to this decline, including:

- Lack of funding
- Lack of available places and caps on training
- Differences in the funding between each of the states and territories
- Lack of available support throughout the period of apprenticeship or traineeship, both for the learner and the employer
- School funding that is (in part) based on successfully getting students through Year 12 and into higher education

Anecdotally, a number of other matters have been brought to the attention of the FBP and PM IRCs which warrant further investigation:

- The age of first major entry into a career pathway like an apprenticeship or traineeship has been rising as schools work to retain students until Year 12, and decisions about apprenticeship entry, which were often made at 14 or 15, are now being made at 17 or 18, however the salary structures remain designed for younger participants and are not supportive of the lifestyles of the older cohort
- It has been reported that some schools are refusing to allow trades to be represented at Career Days as schools attempt to retain students until year 12 and launch them on a University pathway, which has a greater reward under their funding agreements

While the FBP and PM IRCs strongly support the use of workplace-based training in as many circumstances as

<sup>86</sup> [https://www.ncver.edu.au/\\_data/assets/pdf\\_file/0026/5744123/Skilling-the-Australian-workforce-for-the-digital-economy.pdf](https://www.ncver.edu.au/_data/assets/pdf_file/0026/5744123/Skilling-the-Australian-workforce-for-the-digital-economy.pdf)

possible, the identification and removal of barriers has appeared to be well outside the role and sphere of influence of the IRCs. Nor do the FBP and PM IRCs believe that there should be special solutions applied in this industry compared to more consistent approaches across all Australian industries.

Given this, work to address barriers to apprenticeships and traineeships may be more suited to other bodies, such as the National Skills Commission, rather than to individual IRCs.

## Other Relevant Activities

Food and beverage processing and manufacture has a strong connection to regional Australia through the location of processing plants in regional towns and drives the development of those local economies. As with many other industries in regional towns, food and beverage processors in rural areas struggle to access training and assessment delivery through RTOs, in part due to geographical considerations, funding and workforce issues. Pathways such as the VETiS usually cannot offer a wide variety of programs (albeit, a lack of options does not affect employment outcomes for people who do engage in VETiS and Australian School-based Apprenticeships, which are generally very positive).

The FBP and PM IRCs have engaged with a number of other IRCs, to identify shared issues relating to Regional, Rural and Remote Australia, and it appears that the issues affecting the FBP industry are also affecting many other industries based in Australia's non-urban regions.

Several networks of RTOs working with FBP Training Package qualifications have connected to share resources and support each other in adapting to changes in qualification and compliance requirements. In the absence of national resources and clear guidelines for training and assessing new qualifications and units, coordinators and teachers of both the Baking and Wine Industry Operations qualifications have formed informal networks, sharing ideas and solutions across state and territory borders, using teleconferences, webinars and email to communicate. Requests for transition period extensions and for the development of national assessment tools and associated resources have been made by these networks and related industry associations. The development of government-approved assessment tools, training plans and guidelines for RTOs for delivering specific qualifications would reduce the confusion and challenges involved in adapting to new skill requirements in redesigned qualifications and would enable the efficient application of skills training that meets national standards and expectations of the industry.

Many businesses face challenges due to a rapidly changing economy and consumer preferences resulting in shorter-term contracts and less secure workflows. In some cases, food, beverage and pharmaceutical manufacturers cannot guarantee ongoing demand for their products and therefore cannot guarantee ongoing employment for operators. This environment is not favourable to taking on trainees or apprentices with long-term learning programs.

## Section B: Ongoing Consultation

Details of industry consultation undertaken by IRC members and Skills Impact, including with rural, regional and remote stakeholders will be included in the final document that is submitted to the Australian Industry and Skills Committee (AISC). Once submitted, the final document will also be published on the Skills Impact website.

# Section C: Proposed New Work

## 2020–2021 Project Details

### Project 1: Flour Milling

#### Description

The proposed project is for the review of Certificate IV in Flour Milling, with an expectation of deletion of the qualification and incorporation of skills into alternative qualifications through new or revised units of competency, including potentially a stream in food processing or a milling skill set. The Certificate IV has not been fully reviewed and redeveloped since 2011.

#### Rationale

There have been no enrolments in the Certificate IV in Flour Milling for the past three years as the learning outcomes of the current qualification do not meet the needs of technical millers in Australia<sup>87</sup>. There are approximately 400 millers employed across 39 main grain milling plants in Australia<sup>88</sup>. The skills and knowledge required to work in grain milling in 2020 are increasingly related to operating larger and more complex machinery, with a smaller workforce. The Certificate IV in Flour Milling within the VET system is considered out of date and is not used.

Flour and grain milling industries are undergoing radical changes. The ways that operators must now manage machinery, processes, supply chain and traceability systems and adhere to regulations about contaminants and food safety are modernising and changing. The industry has enjoyed productivity gains, but highly trained and skilled technical millers are fewer in number.

Training of new employees, especially in the newer skills in operating digitalised machinery and computer interfaces, as well as the traditional, higher level technical milling skills is now met through the National Association of British & Irish Millers (NABIM) correspondence course supplemented with practical exercises facilitated by an industry association.

#### Ministers' Priorities Addressed

In considering the value of this qualification to the milling industry, this qualification may be recommended for deletion or for redevelopment. This will meet the ministerial priority to reduce the number of qualifications especially those with low to no enrolments.

If this qualification is to be redeveloped, the research into the needs of this industry will provide more information about this industry's expectations of training will be available to training providers to improve their delivery and to consumers to enable better informed choices.

The updating of this qualification to meet the needs of the grain milling industry will ensure that the training system can better support individuals to move more easily between different milling roles within different grain processing plants.

This project will consider whether to replace this qualification with a milling skill set. This will foster greater recognition of skill sets within this industry.

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<sup>87</sup> NCVER enrolment stats

<sup>88</sup> ATMA website

## Consultation Plan

The Australian Technical Millers Association and the Stock Feed Manufacturers' Council of Australia are key stakeholders in this project. Representatives from each of the key milling plants in Australia will be invited to discuss their skill needs and will be consulted about the value of deleting or redeveloping the Certificate IV in Flour Milling. The key mills that have already been approached to engage in current and future work to the competency standards describing the skills of their industry include the following:

- Allied Pinnacle (various locations in 5 states)
- Mauri ANZ (various locations in 4 states)
- Manildra Group (various locations in NSW)
- Lauke Flour Mills (in Victoria and South Australia)
- Ben Furney Flour Mills (in 2 locations in NSW)
- Kialla Pure Foods (Greenmount Qld)
- Tasmanian Flour Mills (Tasmania)

## Other Relevant Information

All qualifications in the Food, Beverage and Pharmaceutical Training Package except for FBP40117 Certificate IV in Flour Milling and FBP30217 Certificate III in Plant Baking have been reviewed during the past two years.

The last full review of the content of FBP40117 Certificate IV in Flour Milling was undertaken before 2011. In 2017 the units within this qualification were transitioned into the new template for unit of competency and the qualifications were recoded. This did not involve a review of the content of these units, assessment of their fit for purpose or review of the appropriateness of their AQF alignment.

Many units within this qualification sit within other qualifications that have already been reviewed and transitioned into the new Food, Beverage and Pharmaceutical Training Package and will not need to be modified. Units specific to the Certificate IV in Flour Milling that may require comprehensive consultation with the milling industry.

Generic skills that will be reviewed within this proposed new work include

- Managerial/leadership skills
- Learning agility/information literacy/intellectual autonomy and self-management skills
- Technology use and application skills
- Science, technology, engineering and maths (STEM) skills
- Design mindset/critical thinking/system thinking/problem solving skills
- Environmental and sustainability skills
- Financial skills

## Scope of Project Overview

This project is expected to take approximately 12 months to complete.

## Key Activity Timing

Months	Activity
1	Project planning and briefing, identification of experts and consultation with IRCs
2-3	Workshops with subject matter experts including research and functional analysis
4-6	Development of draft documents in preparation for public consultation
6 - 8	Public Consultation
9	Review of public consultation and Equity Review
10-11	Validation and Quality Assurance, final consultation for STA
12	Approval of Case for endorsement to IRCs and submission to AISC

## Summary of Components

### Qualifications

- Review – one qualification
- Deletion – up to one qualification

### Units of Competency

- Review – six Units
  - Updating – up to six Units
  - Deletion – up to three Units
- New – up to three Units

### Skill Set

- Up to one new Skill Set

*Table A Summary (excel spreadsheet with full details separately submitted to the Department)*

Grain processing-specific units to be reviewed and considered for deletion or modification:

- FBPGRA3003 Lead flour milling shift operations
- FBPGRA3004 Control mill processes and performance
- FBPGRA4001 Control power and automation for milling processes
- FBPGRA4002 Supervise testing processes for wheat and flour
- FBPGRA4003 Manage mill logistics and support services
- FBPGRA4004 Establish and supervise dust control procedures in a grain processing enterprise



# Project 2: High Volume Production Baking

## Description

The proposed project is for the review of the Certificate III in Plant Baking and the likely deletion of the qualification, with any required skills to be incorporated into other qualifications or Skill Sets.

## Rationale

Certificate III in Plant Baking has very low enrolments, and consultation suggests it is not considered valuable to the industry in its current form. Very few key stakeholders are interested in employing staff with this qualification or in encouraging their existing staff to achieve this qualification<sup>89</sup>.

The units within this qualification that are specific to plant baking have been described as outdated and not useful during consultations with this industry for the current Food and Beverage Processing qualification review project.

The plant baking, or production baking, industry in Australia comprises factories of various sizes mass-producing bread, biscuits, cakes, slices, pies and other bakery products, often for large markets such as supermarkets and franchised retail outlets.

The skills and knowledge required of an operator working in a factory baking bread and similar products do not have the specialisation of a qualified baker. This work involves operating machinery and equipment as part of a production line, following instructions and recipes and troubleshooting problems with equipment and quality control of products. As with other operator roles in the manufacturing industry, these roles now require the ability to operate complex automated machinery with digitalised processed and computer interfaces.

There have been very few enrolments in the Certificate III in Plant Baking for the past three years (2015 – 34; 2016 – 34; 2017 – 27; 2018 – 2)<sup>90</sup>. A full review of this qualification will determine whether this qualification is needed, whether a skill set would address the skills required of plant bakers or whether to develop a specialist stream within the Certificate III in Food Processing.

## Ministers' Priorities Addressed

In considering the value of this qualification to the food processing industry, this qualification is likely to be recommended for deletion. This project will consider whether to replace this qualification with a specialisation within the Certificate III in Food Processing. This will meet the ministerial priority to reduce the number of qualifications especially those with low to no enrolments.

## Consultation Plan

Consultation with production bakeries will involve engaging associations and manufacturers that are both already engaged in Skills Impact activities and reaching out to stakeholders that have not yet participated in training package component reviews.

Many stakeholders will be accessed through the Bakers Association of Australia, the National Baking Industry Association and the Australia Society of Bakers, with whom Skills Impact has already established productive working relationships.

Representatives from manufacturing plants that produce large scale bread, biscuits, cakes, slices, pies and other bakery products will be invited to discuss their skill needs and will be consulted about the value of deleting or redeveloping the Certificate III in Plant Baking.

Several larger bread and pastry manufacturers are participating in the current Food and Beverage Processing project. These stakeholders include a large production bakery who supply bread and pastry products to major Australian supermarkets, and a producer of flatbread products who supply supermarkets and the food services

<sup>89</sup> Anecdotal and verbal responses to questions during consultations for the Food and Beverage qualification review project, 2019.

<sup>90</sup> NCVET enrolment stats

organisations. Other production bakeries already invited to consultations about the current food processing project include smaller, multi-site pastry and bread manufacturers in major cities.

## Other Relevant Information

All qualifications in the Food, Beverage and Pharmaceutical Training Package except for FBP40117 Certificate IV in Flour Milling and FBP30217 Certificate III in Plant Baking have been reviewed and redeveloped during the past two years.

The last full review of the content of FBP30217 Certificate III in Plant Baking was undertaken before 2011. In 2017 the units within this qualification were transitioned into the new template for unit of competency and the qualifications were recoded. This did not involve a review of the content of these units, assessment of their fit for purpose or review of the appropriateness of their AQF alignment.

Many units within this qualification sit within other qualifications that have already been reviewed and transitioned into the new Food, Beverage and Pharmaceutical Training Package and will not need to be modified. Units specific to the Certificate III in Plant Baking may require comprehensive consultation with the production baking and food processing industry.

Generic skills that will be reviewed within this proposed new work include

- Managerial/leadership skills
- Learning agility/information literacy/intellectual autonomy and self-management skills
- Technology use and application skills
- Science, technology, engineering and maths (STEM) skills
- Design mindset/critical thinking/system thinking/problem solving skills
- Environmental and sustainability skills
- Financial skills

## Scope of Project Overview

This project is expected to take approximately 12 months to complete.

## Key Activity Timing

Months	Activity
1	Project planning and briefing, identification of experts and consultation with IRCs
2-3	Workshops with subject matter experts including research and functional analysis
4-6	Development of draft documents in preparation for public consultation
6 - 8	Public Consultation
9	Review of public consultation and Equity Review
10-11	Validation and Quality Assurance, final consultation for STA
12	Approval of Case for endorsement to IRCs and submission to AISC

## Summary of Components

### Qualifications

- Review – One qualification for full review
- Deletion – up to one qualification

### Units of Competency

- Review – three units
- Updating – up to three units
- Deletion – up to three units

**Skill Set**

- New – up to one Skill Set

*Table A Summary (excel spreadsheet with full details separately submitted to the Department)*

Plant baking-specific units to be reviewed and considered for deletion or redevelopment:

- FBPPBK3001 Operate a dough mixing process
- FBPPBK3002 Operate a final proof and baking process
- FBPPBK3003 Operate a dough make up process