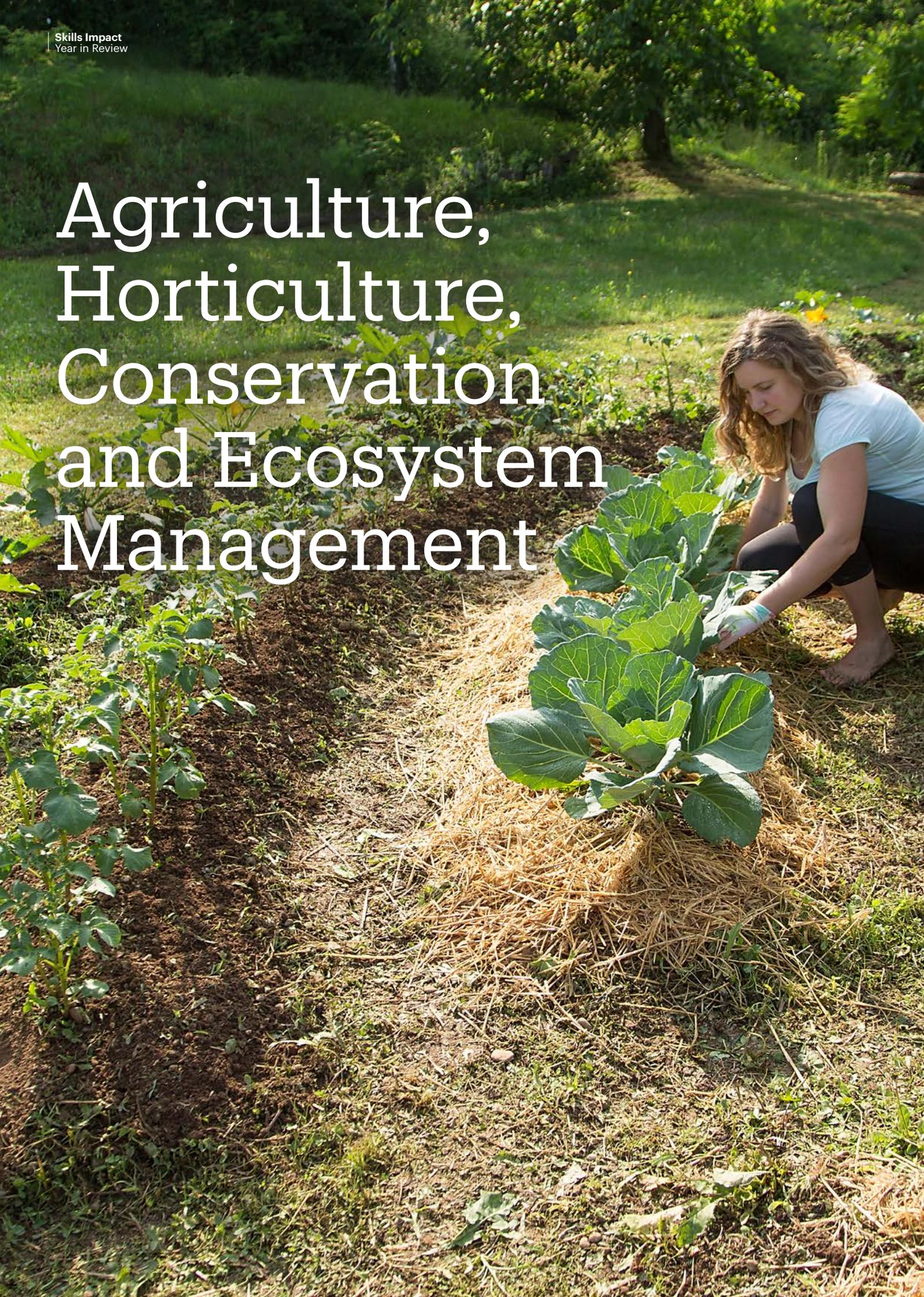


Agriculture, Horticulture, Conservation and Ecosystem Management





Employ over 499,054
people⁴

Are made up of more than
184,186 businesses⁵

Contribute over
\$42.78 billion to Gross
Domestic Product
More than 178,000 businesses⁶

Create revenue of over
\$171 billion⁷

The agriculture, horticulture, conservation and ecosystem management industry is critical in caring for and managing Australia's environmental assets. One key element of this is the production of food for local and international consumption. Another is maintaining land and water, including farmed land, national and state parks, public gardens, sporting grounds and open spaces.

The national skills standards and qualifications for the agriculture, horticulture, conservation and ecosystem management industry are overseen by the Agriculture and Production Horticulture Industry Reference Committee (IRC) and the Amenity Horticulture, Landscaping, Conservation and Land Management IRC.

4 IBISWorld Industry Wizard (2022)

5 IBISWorld Industry Wizard (2022)

6 IBISWorld Industry Wizard (2022)

7 IBISWorld Industry Wizard (2022)

Agriculture and Production Horticulture

The agriculture and production horticulture industry is responsible for producing livestock and crops, including food production for local and international consumers. This highly skilled workforce produces more food than the Australian population consumes, making Australia one of the most food-secure places on earth while being able to export high quality food globally. Enterprises across these industries are extremely varied, with large agribusinesses, as well as niche, specialist, and regional operators.

The challenges of recent years, including natural disasters, global markets, and the COVID-19 pandemic have highlighted the necessity of agricultural skills and knowledge to maintain Australia's food security and support the economy. Industry is developing further skills in new and emerging food sources, sustainability, farm management, digital literacy and compliance to tackle these challenges and pursue new opportunities.

The Agriculture and Production Horticulture Industry Reference Committee (IRC) is one of two IRCs that oversee the national skills standards for the broader agriculture, horticulture, conservation and ecosystem management industry. The other IRC is the Amenity Horticulture, Landscaping and Conservation and Land Management IRC.



The gross value of agricultural production is forecast to be \$80.4 billion in 2022-23⁸

The value of agricultural exports is forecast to reach a record \$64.9 billion in 2022-23, driven by a crop export record of \$39.8 billion⁹

⁸ ABARES (2022); Agricultural Commodities: June quarter 2022; Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra. CC BY 4.0.

⁹ ABARES (2022); Agricultural Commodities: June quarter 2022; Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra. CC BY 4.0.

Agriculture and Production Horticulture Industry Skills Report

This year, Skills Impact prepared an Agriculture and Production Horticulture Industry Skills Report, at the request of the IRC, to provide in-depth information about industry-specific issues impacting skills and training. This is one of nine industry-specific Skills Reports with matching structures produced to assist with collaboration across industries and the strengthening of the Australian VET system.

The robust adaptations, innovations, and evolution of the agriculture and production horticulture industry mean that, notwithstanding on-going challenges due to disrupted supply chains, labour shortages and the COVID-19 pandemic, they are thriving¹⁰. Over 90% of daily food consumed in Australia is provided by Australian farmers and associated food producers and processors within the value chain¹¹, seeing the gross value of production reach an all-time high¹². Around 71% of Australia's 'agriculture, forestry and fisheries' products are exported because there is substantially more food produced than consumed across the nation¹³.

Such trends ensure the products, services and economic contributions of agriculture and production horticulture businesses continue to grow. However, while this industry is playing a critical role in rebuilding Australia's economy, following the most severe impacts of the pandemic, its contributions are constrained by skilled worker shortages, especially in regional, rural and remote areas. The *National Agricultural Workforce Strategy* notes that the best way of future-proofing industry is by preparing all levels of

the workforce through 'learning in all its forms, at all levels, in all the relevant parts of the nation'¹⁴. Such capabilities development will unlock opportunities, including through the improved use of knowledge, practices, and technologies.

In December 2020, the National Agricultural Labour Advisory Committee delivered its National Agricultural Workforce Strategy. It confirmed that the industry is a complex and sophisticated system that relies heavily on the skills of its people. However, there are widespread skills shortages across all sectors of the agriculture and production horticulture industry, presenting a challenge for many businesses. Such issues are both reflective of the impacts of COVID-19 on international workers' entry to Australia and longstanding concerns associated with an ageing workforce. Industry stakeholders are beginning to formulate attraction methods based on workplace-based experience and training opportunities for transferable skills that may be applied across multiple industries. Showcasing industry careers during public events and developing resources that speak to young people are strategies to attract new entrants into specific occupations.

The Agriculture and Production Horticulture IRC has identified priorities which they recommend for future consideration, including:

- The finalisation of the Unit Sector Approach for reviewing the *AHC Training Package*, and further consideration of the rural operations qualifications, including the potential for broader skills requirements as a key part of rural activities.
- Working with other industries to determine which qualifications need to incorporate new and updated units from the current *AHC Training Package*, to identify:
 - an efficient consultation process to update qualifications so that the most recent training standards are accessible, and RTOs can be assisted in the delivery of units
 - any assistance that can be provided across all industries utilising AHC training products to enhance appropriate implementation, enrolments and viability of training delivery.
- The evaluation of the Unit Sector Approach for the review of the *AHC Training Package*.

10 R. Heath (2021); Editorial: Ag thriving in disruption; Farm Policy Journal Vol.18, No.2, Winter Quarter 2021

11 Department of Agriculture, Water and the Environment (2021); Delivering Ag2030; Canberra, May. CC BY 4.0.

12 ABARES (2021); Agricultural Commodities: December quarter 2021; Canberra. CC BY 4.0

13 ABARES (2020); Australian food security and the Covid-19 pandemic; Canberra. CC BY 4.0.

14 J. Azarias, R. Nettle & J. Williams (2020); National Agricultural Workforce Strategy: Learning to excel; National Agricultural Labour Advisory Committee; Canberra, December. CC BY 4.0; p.xiii.

Case study

A cross-sectoral partnership for strengthening agricultural pathways

In September 2021, the Brotherhood of St Laurence convened a system design workshop with Skills Impact, employers, industry, government, community and training stakeholders from agriculture (including Brophy Family and Youth Services, South West TAFE, Dairy Australia, and Food and Fibre Great South Coast). The aim of the workshop was to identify ways to encourage young people to seek employment in the industry, especially in the context of increasing rates of youth

unemployment and longstanding agricultural labour shortages being exacerbated by COVID-19. In the workshop and follow-up consultations, an opportunity was identified to trial a new training approach for encouraging young people into agriculture occupations in the Barwon South West region. Alongside youth under-employment, this AgFutures project aims to address issues around declining uptake and completion of entry-level agricultural programs among new workforce entrants.

In March 2022, Skills Impact and the Brotherhood of St Laurence co-facilitated a workshop with employers and key stakeholders in Warrnambool, Victoria, to understand employers' skills needs, especially for entry level positions on farms. Following these consultations, the AgFutures project has designed a short-form qualification that teaches young people the skills needed to enter the dairy industry while meeting the skills needs of employers.



Agriculture and Production Horticulture Industry Skills Report

Australia's numerous public and private green spaces can be enjoyed thanks to the hard work of the amenity horticulture, landscaping, conservation and ecosystem management industry.



The Amenity Horticulture, Landscaping, Conservation and Ecosystem Management industry works with and protects Australia's environmental assets, now valued at more than \$6.5 trillion according to the ABS¹⁵ and CSIRO¹⁶.

The nursery industry has reported a sustained rise in plant sales since the start of COVID-19-related restrictions, with an overall 26% increase in sales and over 2.2 billion plants produced and sold in Australia in 2019–2020¹⁷.

Drawing on a vast array of skills, this workforce cares for and maintains national and state parks, public gardens, sporting grounds, and green spaces, and supports private gardening and growing activities. As cultural attitudes, government policies, and the natural environment itself shift, new skills and job roles are emerging in the industry. With the importance of biodiversity and biosecurity becoming better recognised and climate change becoming a global priority, skills and labour across the industry will be in high demand.

The Amenity Horticulture, Landscaping, Conservation and Land Management Industry Reference Committee (IRC) works alongside the Agriculture and Production Horticulture IRC, which together oversee the national skills standards for the broader agriculture, horticulture, conservation and ecosystem management industry.

15 ABS (2019); 4655.0 - Australian Environmental-Economic Accounts, 2019; <https://www.abs.gov.au/ausstats/abs@.nsf/Latestproducts/4655.0Main%20Features22019?opendocument&tabname=Summary&prodno=4655.0&issue=2019&num=&view=>; viewed 22/02/2022.

16 CSIRO (2020); *Australia's Biosecurity Future*

17 Greenlife Industry Australia (2022); *Nursery papers: Learn more about your business with industry data*; <https://www.greenlifeindustry.com.au/static/uploads/files/nursery-paper-march-2022-fostering-innovation-within-production-nurseries-wfdvvcfvmond.pdf>; viewed 13/05/2022

Amenity Horticulture, Landscaping, Conservation and Ecosystem Management Industry Skills Report

This year, Skills Impact prepared an Amenity Horticulture, Landscaping and Conservation and Land Management Industry Skills Report, at the request of the Industry Reference Committee (IRC), to provide in-depth information about industry-specific issues impacting skills and training.

Industry has navigated many challenges over the past two years, with COVID-19, drought, bushfires, floods and trade issues causing disruptions. However, these events have also demonstrated the high demand for a skilled amenity horticulture, landscaping, conservation and ecosystem management workforce. With people spending more time at home, nursery and landscaping services and products have been in high demand. There is also a need for skills to mitigate and deal with the impacts of climate change.

The demands for skills, labour and work in this area are likely to grow beyond the current predictions and expectations of the National Skills Commission and other analysis bodies. Improved analytic data is important in managing these needs, including data on new and emerging industry sectors and skills. This is particularly pertinent as industry continues to be elevated as a national priority, in relation to addressing climate change and in recognition of the critical importance of biodiversity and biosecurity to all Australian land and water activities.

Workers in amenity horticulture, landscaping, conservation and ecosystem management are critical for sustaining Australian biodiversity, which helps to regulate climate, water quality, pollination, animal health and habitats, flooding,

droughts, bushfires and storm surges. In Australia, managing biodiversity is especially important and complex because of the sheer number of native and unique plants and animals. *The Strategy for the Australian Native Seed Sector*, published in late 2021, provides a ten-year plan to better manage the restoration and rehabilitation of landscapes and support biodiversity conservation. To build the capacity of the sector, as well as improve employee retention and attraction, the strategy focusses on making education and training more accessible. Specifically, there are objectives to 'work with providers and potential providers of native seed education and training to strengthen the range and quality of education and training provided'; and to engage with the sector 'to identify existing education and training programs that can be expanded and any gaps where new programs should be developed'¹⁸.

More of Australia's land and water is being returned into the custodianship of Aboriginal and Torres Strait Islander people. With this has come a change in the way that work is being undertaken to protect and conserve the ecosystem. Aboriginal and Torres Strait Islander communities, business enterprises and individuals are also now major employers of workers or service providers in ecosystem management. Various industry stakeholders have recognised the importance

of developing closer working relationships with Aboriginal and Torres Strait Islander communities and business enterprises. This is likely to be an ongoing priority for the skills and VET system because many potential opportunities, including for ecosystem management, can be unlocked with traditional cultural knowledge and practices.

The Amenity Horticulture, Landscaping and Conservation and Land Management IRC have identified priorities which they recommend for future consideration, including:

- the finalisation of the Unit Sector Approach for reviewing the *AHC Training Package*, and further consideration of the Rural Operations qualifications, including the potential for greater recognition of ecosystem management as a key part of rural activities
- evaluation of the Unit Sector Approach for the review of the *AHC Training Package*
- working with the Arts and Personal Services Cluster (specifically relating to Tourism and Hospitality) to ensure that food handling, biosecurity, provenance, traceability and other relevant skills are incorporated into their qualifications with the guidance of experts from the Agribusiness, Food and Fibre Industry Cluster.



Projects

Project work between 2021-22

Outlined over the following pages is a summary of the projects Skills Impact managed between July 2021 and June 2022.

The Amenity Horticulture, Landscaping, Conservation and Land Management Industry Reference Committee (IRC) and Agriculture and Production Horticulture IRC oversaw the project development, as part of their responsibility to support engagement with their industry and to ensure the projects meet stakeholder needs.

The skills standards and qualifications updated as part of the following projects are expected to be endorsed by the AISC and State and Territory Ministers in late 2022.

Ag and Horticulture Core Skills Project

Australia's agriculture and horticulture industry is made up of a workforce of more than 452,000 people who play an integral role in producing food and fibre and caring for our land and water bodies. While the expertise across professions is varied, the industry is underpinned by core skills in workplace health and safety, environmental practices, quality assurance procedures and workplace recording.

These skills help to build and maintain infrastructure, support community related projects and programs, research initiatives and staff performance and are crucial across these settings.

Community consultation took place throughout this project to update and develop national qualifications, skill sets and units that describe these important core skills so that they reflect real job functions that are undertaken by graduates.

Qualifications, skills sets and units were updated to include work functions that reflect current job roles in the industry and incorporate the latest technologies, equipment and advances in agriculture, horticulture and community coordination and facilitation.

Key Outcomes

- Thirteen qualifications have been revised, including the Certificates I, II, III, IV and Diploma of Agriculture; Certificates I, II, III, and IV of Horticulture; the Diploma of Horticulture Management; the Diploma of Community Group Coordination and Facilitation; the Certificate III in Production Horticulture; and the Certificate III in Rural Operations. They have been updated to reflect current job roles, including the skills and knowledge to:
 - utilise new and emerging technology and systems
 - address new and updated regulatory and legislative requirements
 - work safely and communicate work safety procedures respectfully both up and down the chain of command
 - address issues around biosecurity, environmental sustainability and quality assurance.
- The Advanced Diploma of Horticulture is proposed for deletion due to low enrolments and industry feedback that indicated it was no longer required.

- A skill set was developed to address safety management and the investigation of workplace health and safety incidents in the agriculture and horticulture industry.
- Sixty-three units were revised, including changes such as:
 - updates to indicative AQF levels to reflect job functions
 - adjustments to reflect regulatory and legislative requirements
 - changes to reflect current Standards for Training Packages (2012)
 - merging of two units to avoid duplication.
- Two units were developed:
 - AHPCPC308 Identify and select plants
 - AHCMOM303 Operate a telehandler.
- Four units are proposed for deletion as they are no longer required by industry. Five more have been identified for deletion pending future review of the qualifications in which they currently sit.

Permaculture, Organic Production and Composting Projects

Producers are increasingly incorporating techniques based around principles of permaculture, organic production and composting to keep up with demand for sustainably grown produce and support future food security. These production methods can improve the resilience of our food production systems, reduce waste and help optimise available resources.

Key Outcomes

Permaculture

- Five qualifications were revised and updated to incorporate unit changes including merging of content and adjustments to Australian Qualification Framework alignment for some units.
- Twelve new skills sets were developed to meet industry needs related to permaculture fundamentals. One existing skill set for a Permaculture Demonstrator was revised.
- Fifty-five permaculture units of competency were reviewed, resulting in four being merged into two and five proposed for deletion. One unit was also developed based on a previously deleted permaculture unit. Selected units are to be included in Certificate I to Diploma level Agriculture qualifications.

Organic production

- The Certificate IV and Diploma of Organic Farming were proposed to be deleted and replaced with specialisations within existing agriculture qualifications.
- Three organic production skill sets were revised, and one new skill set was developed to incorporate skills and knowledge required to plan,

consultation has taken place throughout this project to review and update the national qualifications and skills standards for work using the principles of permaculture, organic production and composting. Thanks to the contributions of all involved, qualifications, skill sets and units were revised and updated to reflect the evolution of industry job roles and skills needs. Attention has been paid to how to incorporate the skills for these important practices throughout agriculture qualifications, as they are useful and necessary across a range of job roles and environments.

manage, and oversee certification of organic or biodynamic farms and farm produce.

- Fourteen organic production related units were updated to incorporate skills and knowledge relating to certification schemes, compliance and the implications of non-compliance when undertaking work tasks. Organic units are proposed for inclusion in other agriculture, horticulture, conservation and land management (AHC) qualifications at the appropriate level.

Composting

- Five skill sets were developed to describe expertise in micro-sectors of the composting industry.
- Six composting units were updated, where necessary, to include reference to relevant legislation, standards and codes of practice, including workplace health and safety and environmental requirements. The units will be included in agriculture and horticulture qualifications as electives for on-farm composting activity, as well as in waste management qualifications.
- The Certificate III in Commercial Composting was proposed for deletion.



Pig and Poultry Farming Project

Skills in biosecurity, animal welfare, safety and sustainability are crucial for pig and poultry farmers to raise and care for animals used to produce some of the staple foods in Australia. It is important that qualification and skills standards for this work are kept up to date.

Consultation has taken place throughout this project to revise pork and poultry units, skill sets and qualifications, so that they incorporate current industry practices and job functions and support pathways for graduates into employment.

Key Outcomes

Pork

- The Certificate III in Pork Production has undergone structural revisions, with some core and elective units moved and changes to the number of units required to be completed from the core or elective lists or permitted to be completed from outside the qualification.
- Two skill sets were updated to reflect changes to the units and unit codes. Descriptions were added to reflect the purpose of the skill sets.
- Seven units have been revised to incorporate skills standards around biosecurity, current work health and safety practices, and animal welfare requirements.
- Pork Industry Euthanasia Skill Set is proposed for deletion as it is no longer reflects industry skills needs.
- The unit AHCPRK306 Monitor and maintain outdoor pig production is proposed for deletion as it is no longer reflects industry skills needs.

Poultry

- The Certificate III in Poultry Production has undergone structural revisions, with changes to the lists of core units and elective units and to the number of core and elective units required. Specialisations were developed, including poultry farm technician, poultry breeding technician, egg grader, poultry services provider, and poultry hatchery technician.
- Five new skill sets were created to reflect the five specialisations in the Certificate III in Poultry Production.
- Seven existing skill sets were proposed for deletion as they are no longer required by industry.
- Ten units have been revised to improve clarity and better match industry practice.



Respect for Country Job Skills Project

Aboriginal and Torres Strait Islander cultures have a long history of caring for Country, using skills for land and water management activities developed over thousands of years. Some of these skills are described in nationally endorsed qualifications, skill sets and units that are used by registered training organisations (RTOs) to equip learners for jobs as rangers, natural resource management field officers, cultural and heritage officers, land council site officers, tourism operators, conservationists, and guides. These job roles are highly valued by communities, as they reflect work of inherent cultural importance to Traditional Owners, as well as providing economic and cultural benefit to communities.

Led by Aboriginal and Torres Strait Islander project partners, the qualifications, skill sets and units for this work have been updated, so that culture, skills and knowledge are better reflected; unit integrity is retained; and the unique nature of caring for Country for each community is recognised.

The titles of the qualifications and coding of the units have been updated to reflect terminology that is more accurate, culturally sensitive and preferred by industry and those using the skills standards. The sector previously known as Aboriginal Sites Work (ASW) is now Cultural Sites Work (CSW) and the sector of Indigenous Land Management (ILM) is now On Country Management (OCM).

Key Outcomes

- Industry sector codes have been updated to reflect appropriate language and consistent terminology, including:
 - industry sector code AHCASW Aboriginal Sites Work has been updated to AHCCSW Cultural Sites Work
 - industry sector code AHCILM Indigenous Land Management has been updated to AHCCOM On Country Management.
- Two qualifications – the Certificate III in Aboriginal and/or Torres Strait Islander Cultural Sites Work and the Certificate III in On Country Management – have been revised to clarify job roles, reflect the latest technology and equipment and improve flexibility of delivery and career pathways. They have been retitled to be in line with the



updated terminology used in the new sector codes.

- The Advanced Diploma of Conservation and Land Management has been renamed the Advanced Diploma of Conservation and Ecosystem Management in line with changes made as part of the Conservation and Land Management Project in 2020.
- Seven skill sets have been updated to reflect changes in the units and their codes have been revised.
- A new unit AHCCSW401 Contribute to the development of cultural safety processes has been developed.
- Thirty five units have been reviewed and updated including:
 - updates to support awareness and understanding of different legislation, regulations, local laws and community Lores
 - updates to support protection of Indigenous Culture and Intellectual Property (ICIP) and cultural safety through shared respect, meaning and knowledge
 - revisions to improve relevance and clarity, support foundation skills, and remove barriers to assessment.

Skills Impact recognises the traditional custodians and owners of this land and all who have a connection to Country, as well as their role in caring for and maintaining Country over thousands of years. We respect Elders and Leaders past and present, and all Aboriginal and Torres Strait Islander Peoples who have helped to create the culture and knowledge that project participants have been and are willing to share with us. We acknowledge and thank the many project partners including Traditional Owners, Land Councils and organisations, registered training organisations, Government and non-government organisation representatives who have collaborated with us in this project.

Water Allocation and Entitlement Skills Project

Water catchments and systems are a vital resource that need to be preserved and managed for the long-term to support the interests of all Australians. Farmers and irrigators rely on water resources to produce food and fibre. With the right skills and knowledge, access to water markets can help improve farm productivity, provide greater choice and flexibility in business decision-making, and help inform risk management. Expertise is required to participate in Australia's water markets, including navigating changing prices, managing buying and selling processes, calculating the carryover of water, and managing risk strategies around climate for long-term water allocation.

From its informal beginnings around 20 years ago, water trading in Australia has evolved into a multifaceted market, with different jurisdictions, states and territories in operation. One of the recommendations of the Keelty Report into management of Murray-Darling Basin water resources was to incorporate water literacy into education, including via VET.

Industry has provided their expertise throughout this project to develop national skills standards that will support the next generation of farmers and those with water entitlements to effectively navigate Australian water markets. They were published on the national training register (training.gov.au) on 31 July 2022.

Key Outcomes

- Two skill sets have been developed to support the skills required by agricultural managers, workers and farmers in participating effectively in Australia's multifaceted water markets.
- Three units have been developed to describe the skills farmers and those with water entitlements require to correctly engage with water trading practices, including the purchase and selling of water, navigating carry over water or continuous accounting options and how to procure, receive and monitor water.
- The developed units are included in the *Certificate III in Irrigation and the Diploma of Agribusiness*.



Completed Projects (started in the previous year)

The following projects were endorsed by the Australian Industry and Skills Committee (AISC) and State and Territory Skills Ministers. The revised qualifications, skill sets and units, that were developed as part of these projects, are published on the national training register (training.gov.au) and available for delivery by registered training organisations (RTOs).

Visit www.skillsimpact.com.au/completed-projects for further details.

Animal Reproduction Project

Technical and digital skills are required to take advantage of technologies used for managing livestock reproduction. Qualifications, a skill set and units were revised to reflect terminology relating to different livestock species; key skills for maintaining health and safety in the workplace, including use of personal protective equipment and hygiene procedures; and the current biosecurity, environmental and animal welfare legislation and regulations.

Crops, Pastures and Seeds Project

Farmers and seed producers are drawing on the latest technology and science in response to increasing global demand for food and fibre and changing environmental conditions. As a result of this project and consultation with industry throughout Australia, units across the seeds, crops and pastures sectors were updated so that they accurately capture current industry practices and technologies. New units were developed to reflect up-to-date industry practice and include an array of the latest technology implemented in the field, from satellite positioning guidance of farming equipment to laser technology designed to detect pests and disease.

Dairy and Milk Harvesting Project

As a result of consultation as part of this project, skills standards for dairy and milk harvesting were revised and updated to reflect modern terminology, equipment used and job roles, as well as traditional methods. The Certificate III in Agriculture (Dairy Production) was changed to Certificate III in Dairy Production, existing units were revised, and some were deleted to reflect current skills needs. One skill set and one unit were developed to capture the skills and knowledge required to maintain automated mass milking machines.

Landscaping Project

Thanks to the input of all involved in this project, qualifications and units for landscaping construction and design were revised to include the latest technologies, equipment, regulations, and consumer trends, and more accurately describe job functions and the range of tasks involved.

Parks and Gardens Project

As part of this project, the Certificates II and III in Parks and Gardens and units within them were updated to support strong pathways into the industry and reflect the common skills required by the sector. The updated skill standards now describe current terminology, equipment, work practices (including sustainable use of materials), environment, and workplace health and safety requirements.

Skills for Land Rehabilitation (Mined Land) Project

This project addressed the need for national skills standards for the rehabilitation of land that has been used for mining, resulting in the development of four skill sets and a 'rehabilitation of mined land' specialisation in the Certificate III in Conservation and Ecosystem Management. The updated skills standards also reflect that Indigenous rangers and other Aboriginal and Torres Strait Islander community members can often undertake this work and that it may require multiple inputs from a range of services, including environmental advisors and field workers.