Environmental Sustainability Skills

Cross-industry project

DRAFT Case for Change

November 2017

Contents

1. Administrative information

Name of cross-sector project	Environmental Sustainability Skills Cross-Sector Project
Name of the lead SSO	Skills Impact
Project webpage address	http://www.skillsimpact.com.au/automation/
Members of the Project Reference Group	Attachment A
Training packages, qualifications, skill sets and units of competency impacted by proposed cross-sector training product components	Attachment B
Stakeholder consultation method and scale	Attachment C

2. Executive summary

Many of the skills most valued by industry apply in multiple sectors of Australia's economy. New and emerging work roles and activities are also relevant across industry boundaries as digital transformation and disruption reshapes traditional industry sectors.

The Australian Industry and Skills Committee (AISC) has identified emerging themes that are affecting future workforce skill requirements across all Australian industry. These themes have formed the basis for eight cross-sector projects that aim to reduce levels of complexity in the vocational education and training (VET) system by addressing common skill needs, minimising duplication of units, consolidating existing units and removing units that are no longer being used.

Environmental sustainability skills cross-sector project

Purpose

The purpose of the Environmental Sustainability Skills cross-sector project, led by a Project Reference Group and managed by Skills Impact, is to identify skills that are shared by multiple industry sectors in relation to environmental sustainability, and to develop a Case for Change recommending training package developments and modifications to address the identified cross-industry skill requirements.

This work will contribute to Australia having training products that can support and sustain progress toward greater environmental sustainability through the development of skilled workers. The identification and development of responsive VET products is essential so that the training system is able to prepare the Australian workforce for the jobs of the future.

Scope

Australia's transition toward a more environmentally sustainable society is being driven by political, economic, social and environmental imperatives. The transition brings challenges for the vocational education and training (VET) system to ensure that the Australian workforce is equipped with the skills required for new ways of working. The 2009 Green Skills Agreement committed the federal and state and territory governments to work with the VET sector to ensure the skills for environmental sustainability are integrated into vocational education and are relevant to the needs of industry.

Although the term 'green skills' is widely used to describe skills for environmental sustainability, there is a view among some industry stakeholders, as discussed by the Project Reference Group, that this term promotes a message that has negative connotations in some sectors. This project has adopted the term 'environmental sustainability skills' based on the definition used by COAG in the Green Skills Agreement (2009).

Skills for sustainability, also known as green skills, are the technical skills, knowledge, values and attitudes needed in the workforce to develop and support sustainable social, economic and environmental outcomes in business, industry and the community.

These skills can be divided into two broad categories:

- General skills, such as knowledge of sustainable materials and knowledge of mitigation strategies
- Specific skills, such as those needed by an electrician working in renewable energy.

The second of these categories is outside the scope of this project as it encompasses industry-specific skills, rather than those that are applicable across multiple industries.

Objectives

The project objective is to identify training product modifications and developments that will enable the VET system to equip the Australian workforce with the skills required to support environmental sustainability across multiple industries.

Sectors and industries impacted

Project research identified three broad skill areas for consideration, based on research in this field including a review of commonalities in 2017 IRC Skills Forecasts. These skill areas impact different industries and sectors in different ways, but are applicable to many, if not all, industries and occupations.

The identified skill areas are:

1. **Environmentally sustainable production methods and energy management**
   Skills relating to the use of environmental and cleaner technology, renewable energy and its storage, energy management systems, sustainable production methods (not including design, manufacture and installation).

   Industry sectors with significant requirements for skills in this area include:

   o Agriculture and production horticulture

   o Automotive retail, service and repair

   o Construction

   o Electricity supply industry – generation sector

   o Electrotechnology

   o Extractive industries

   o Food processing

   o Manufacturing

   o Timber and wood products

   o Water.

2. **Natural resource management and waste handling**
   Skills involving the application of sustainability practices in the use of natural resources (land, water, air), waste minimisation and management, recycling, and carbon offset. Skills in chemical management, including safe use, management and disposal, minimising environmental impacts, managing chemical and pesticide by-products.

   Industry sectors with significant requirements for skills in this area include:

   o Agriculture and production horticulture

   o Amenity horticulture, landscaping, conservation and land management

   o Aquaculture and wild catch

- o Civil construction
- o Extractive industries
- o Food processing
- o Forest management and harvesting
- o Furnishing
- o Manufacturing
- o Printing
- o Property services
- o Textiles, clothing and footwear
- o Timber and wood processing.

3. **Consumer/market driven environmental sustainability practices**

    Skills that ensure an organisation's 'green' reputation or social licence to operate are maintained, including concepts of ethical supply chains, provenance, carbon footprint, product traceability, eco-tourism and other environmental sustainability initiatives. Skills relating to organisational or industry environmental sustainability frameworks and governance.

    Drivers in this skill area are expected to strengthen over time due to increasing consumer information and awareness linked to community expectation for environmental sustainability. Industry sectors that are currently identified as having significant requirements for skills in this area include:

    - o Agriculture and production horticulture
    - o Aquaculture and wild catch
    - o Civil construction
    - o Education
    - o Food processing
    - o Forest management and harvesting
    - o Meat processing
    - o Mining
    - o Retail services
    - o Textiles, clothing and footwear
    - o Timber and wood processing
    - o Tourism, travel and hospitality.

Summary of proposed changes

The changes proposed are:

1. Review 79 existing units of competency (listed in Attachment B, Table 1) due to their coverage of common cross-industry skills in environmental sustainability. Of the 79 identified units:

   a. 62 have potential to be replaced by a cross-industry unit

   b. 17 have potential to be adapted for cross-industry use

   The potential of these units for replacement or cross-industry application needs to be considered in relation to identified environmental sustainability skill areas that are common across multiple industries.

2. Review 9 existing skill sets (listed in Attachment B, Table 2) for potential for cross-industry use.

A suitable 'home' for the new or revised units and skill sets will need to be identified through further stakeholder consultation and consideration by the AISC, department, IRCs and SSOs.

3.   The case for change

Current and emerging developments in skills needs

Skills Impact commissioned Ithaca Group to undertake some of the research and consultation activities contained within this project. Research findings and analysis were considered by Skills Impact and the Environmental Sustainability Skills PRG to inform the development of the Case for Change.

Current and emerging developments in skills needs have been identified both through a 'top down' and 'bottom up' analysis. The 'top down' analysis drew on desktop research and analysis of national and international industry and workforce trends, and stakeholder consultation.

Emerging themes from the 'top down' analysis are:

- **The VET sector is particularly well-suited to providing development in environmental sustainability skills** – While environmental sustainability skills may be developed through the schooling system and higher education, its development is of the utmost importance in the VET system as the bulk of training for skills-based occupations occurs through VET.

- **Training needs to work 'hand-in-glove' with changes in practice at an industry level** – There is a need for industrial change to happen rapidly alongside educational change to make environmental sustainability training possible and relevant. While change in the workplace can be facilitated by vocational education and training, the development of VET products relies on industry articulation of required skills. Addressing environmental sustainability through workforce training is an opportunity for businesses to add value to their operation and reputation. Although it is difficult to quantify the monetary benefits to a business, they

should not be ignored in making a case for greater attention to workforce skilling in environmental sustainability.

- **Cross-industry policy coordination needs to happen at planning, design and implementation stages** – For VET initiatives in environmental sustainability skills to succeed, coherent policy change is needed across the economic, environmental and training sectors. Aligning policy to create a profitable and environmentally sustainable economy is a major challenge. Research indicates that a lack of environmental sustainability skills is currently impeding investment in an environmentally sustainable economy[1]. This lack of investment makes it challenging for industry to commercialise and implement new technologies on a domestic and international level, and to create sustainable work environments in which to train future workers[2].

- **There are variations among industries concerning the drivers for sustainable practice** – In relation to environmental sustainability, industry can be broadly separated into three sectors:

  o emerging green industries

  o existing industries which already contribute to positive environmental change

  o all other industries.

  Environmental sustainability skills are important in all areas. While it is important to support innovation in emerging industries, it is also important to maintain existing industries while ensuring that the skills required in these industries are adapted to meet the requirements of an environmentally sustainable economy. 'Adaptation' will mean something different for each industry.
  Some industries, such as the mining industry, are driven to change largely by regulation, while others, such as the agriculture industry are driven by economic factors, and those such as automotive are driven by consumer preference in Australia, along with regulation in other regions such as the EU. Each industry has its own drivers and sensitivities which require specific responses.

A 'bottom up' analysis was used to examine existing training package components and IRC Industry Skills Forecasts and Proposed Schedules of Work. The analysis process identified units of competency with potential for use across multiple industries using the following steps:

1. Search of training package content using key terms

2. Sorting of units into environmental sustainability skill areas to identify commonalities

3. Identification of source training package for each unit

4. Removal of units with no potential for cross-industry use (i.e. those with industry-specific regulatory outcomes, industry-specific technical requirements or application to only one industry sector)

5. Review of individual units, including consideration of:

   a. workplace hierarchy (i.e. application for entry-level, supervisory/managerial, or environmental sustainability manager/specialist roles)

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[1] International Labour Organization (2011) Greening the global economy – the skills challenge, Geneva: Skills and Employability Department Employment Sector
[2] McDonald, G., Condon, L., and Riordan, M. (2012) The Australian Green Skills Agreement: Policy and Industry Context, Institutional Response, and Green Skills Delivery. Sydney, TAFE Directors Australia

b. cross-industry use – an assessment of the likely extent of cross-industry use based on how many different training packages included the unit, how many different qualifications included the unit, and the extent of difference between the industries that use the unit

c. uptake (i.e. use of the unit reported in NCVER VOCSTATS database for Total VET Activity 2015-16)

6. Assessment of suitability and quality – including consideration of each unit's relevance to cross-industry environmental sustainability skills, and indicators of high quality such as clarity, coherence and alignment of assessment requirements with performance criteria.

This analysis identified:

- Potential areas of duplication

- Existing competencies that could be modified to allow use across industries

- Opportunities for the development of new units of competency, skill sets or qualifications.

In addition to the 'bottom up' analysis conducted by Skills Impact, the department's AISC Industry Policy and VET Data Analytics teams piloted an automated text analysis process enabling deep content searches of units of competency. Key search terms used in the Skills Impact analysis were used in the prototype search tool and generated a list of 573 units. A number of the identified units were considered by Skills Impact during the 'bottom up' analysis and were determined not to have potential for cross-industry use due to their industry-specificity or regulatory relevance.

The additional units identified through the pilot process output will need to be further investigated to determine their coverage of common cross-industry skills in environmental sustainability.

Units that could be removed because of duplication
The units identified in Attachment B, Table 1 are recommended for review due to their coverage of common cross-industry skills in environmental sustainability. The table includes 62 units of competency that have potential to be replaced by cross-industry units.

Units that could be imported into various training packages
Among the units of competency recommended for review in Attachment B, Table 1, 17 units have been identified as having potential for revision to accommodate application across multiple industries.

Additional training package component consideration
The project has identified potential for the development of environmental sustainability skill sets that can be applied across multiple industries. These are listed in Attachment B, Table 2.

Opportunities to promote occupation mobility and for modernising sector/industry specific units, qualifications or skill sets

In addressing the identified areas of potential duplication in existing training packages, an opportunity exists to create new products that enable the development of transferable skills and knowledge that is valued in many industry contexts. In analysing existing units, Skills Impact used a framework of

environmental sustainability skill areas, listed in the column and row headers in the table below, to categorise and group related skills. A similar organising framework could be used in future to help training product users from across industries to identify the units of competency that best suit their skill development needs.

The framework below is provided to illustrate the way that units of competency can be clustered into skill levels, as categorised in the top row, and categories of skills, as listed in the first column. The unit titles are examples of units found in existing training packages that have been identified as suitable for cross-industry application. These are examples only to demonstrate how the model was used to identify and consider like units during the analysis process. Such a framework also has potential to help identify where there are gaps in the availability of cross-industry units of competency. For example, there may be a gap at the entry-level for cross-industry units of competency that describe the skills required for people to look at their work area and identify ways to do things in a more environmentally sustainable way.

	Environmental sustainability skills for entry level jobs	Environmental sustainability skills for supervisors and managers	Environmental sustainability policies and systems
Environmentally sustainable production methods and energy management	*MARJ001 Follow environmental work practices*	*RIIENV601D Establish and maintain the environmental management system*	*PMASUP420 Minimise environmental impact of process*
Natural resource management and waste handling		*TLIU4001 Implement and monitor environmental protection policies and procedures*	*AHCAGB508 Improve agricultural sustainability using renewable energy and recycle systems*
Consumer/market driven environmental sustainability practices		*AMPX410 Facilitate achievement of enterprise environmental policies and goals*	*BSBSUS501 Develop workplace policy and procedures for sustainability*

A review of existing units in environmental sustainability skills will provide an opportunity to further consider how these skills can be most effectively included in training products for multiple industries. A valuable outcome of this cross-industry work could be the production of a tool to help training package developers integrate environmental sustainability into training products consistently and effectively. For some industries this may be a more useful approach than the availability of stand-alone units of competency that may not be taken up.

The development of a tool for training package developers could be supported by analysis of the way in which workplace health and safety is embedded into work practices in existing units of competency. Similar approaches may be suitable for environmental sustainability where certain skills and knowledge underlie all work practice.

Deep searches of unit content are now possible with an automated text analysis process piloted by the department. This search capability has potential to inform further work by making it possible to detect and compare different approaches to embedded skills within all units of competency.

Sector/industry drivers of change

Drivers of demand for environmental sustainability skills vary between industries and sectors. They include:

- Regulatory and legislative requirements

- Consumer preferences and expectations

- Business sustainability, especially where businesses depend on the health of the environment for their continued operation e.g. ecotourism, wild catch, agriculture.

Proposed changes

Proposed change	Rationale
1. Review 62 existing units of competency where there is potential duplication	The units of competency identified address skills that are common across multiple industries. There is scope for a smaller number of cross-industry units to replace many of the existing units in this area.
2. Review 17 existing units of competency with a view to adapting them for cross-industry use	The units of competency proposed for revision to enable cross-industry use were assessed as both high quality and very readily adaptable for cross-industry use.
3. Review 9 existing skill sets to consider their potential for cross-industry use	Wider availability of these skill sets may enable upskilling at a number of AQF levels to support emerging roles in addressing environmental sustainability across multiple industries.

It is proposed that a framework for organising cross-industry units in environmental sustainability should be used to assist the identification of commonalities and potential duplication across industries. An organising framework would help potential users from all industries to identify the product that is relevant to their skill development needs and may also serve to identify gaps in training product coverage. Suggested organising categories for a framework have been identified through analysis of current training package content and IRC Skills Forecasts. They provide a means to organise units according to their environmental sustainability focus and their relevance to employees with differing levels of responsibility for environmental sustainability.

Proposed categories for an organising framework are:

- Skill areas

  o Environmentally sustainable production methods and energy management

  o Natural resource management and waste handling

  o Consumer/market driven environmental sustainability practices

- Workplace hierarchies

  o Environmental sustainability skills for entry level jobs

- o Environmental sustainability skills for supervisors and managers
- o Environmental sustainability policies and systems

Implementation advice and considerations

The PRG has identified implementation issues that will need to be considered in relation to the proposed cross-industry training products for environmental sustainability skills. However, these issues are not unique to the environmental sustainability skills project; they apply to all cross-sector projects. These are:

- Capacity of generic training products to simultaneously support contextualisation to meet industry requirements, and compliance with audit requirements under the Standards for RTOs

- Flexibility of packaging rules around the importation of units of competency

- Capacity of training providers to work with industry to deliver relevant, contextualised training outcomes, including access to equipment and technology, and availability of skilled staff

- Availability of appropriate support resources and implementation guides

- Flexibility of funding arrangements to support the delivery of skill sets, and accommodate the need to upskill workers of all ages, abilities and stages of professional life

- Engagement with stakeholders across all industries and IRCs to ensure generic products are broadly relevant, recognised and supported

- Suitability of 'housing' arrangements for new products to ensure they are accessible and recognised by potential users across all industries.

Contextualisation has been identified by the PRG and many stakeholders as a significant implementation issue for cross-industry approaches, and something that is extremely important to industry and employers. All skills, and skill development, need a context; but units of competency are not delivered in isolation. Generic, or cross-industry, units of competency get their context from the other units they are packaged with, the learner's background and interests, and the delivery and workplace environment. The development and implementation of cross-industry units needs to be sensitive to the way in which these influences can and should contextualise unit outcomes so that they are relevant across multiple industries.

4. Industry support for change

Consultation approach

Consultation processes used for the project have leveraged PRG and IRC member networks, Skills Impact stakeholders, and other SSOs.

Attachment C contains more information on stakeholder consultation methods and scale.

Cross-sectoral support for proposed changes

Cross-sectoral engagement in the project has been secured through PRG membership targeting key industries with interest in environmental sustainability skills. PRG members have used their own IRCs and stakeholder networks to share information on the project. Responses to an online survey were received from the following industries:

- Agriculture, Production Horticulture
- Amenity Horticulture, Sports Turf, Landscaping, Conservation
- Automotive
- Business Services
- Civil Construction
- Forestry, Timber
- Horse, Animal Care
- Information Technology
- Maritime
- Mining, Extractive, Quarrying
- Safety
- Seafood
- VET sector
- Wealth and Finance.

All survey respondents indicated that environmental sustainability was relevant to job roles within their industry. Overall, environmental sustainability was reported as being relevant to:

- Most or all entry level job roles, by 80% of respondents
- Most or all supervisory/management job roles, by 95% of respondents
- Most or all specialist/technical roles, by 70% of respondents

Survey respondents overwhelmingly believed that it would be useful to review the units identified in the report to consider their potential for cross-industry use. There was considerable support, expressed through the survey, for making greater use of existing training products rather than developing new products.

Issues identified by stakeholders

The issues identified by stakeholders mirrored the implementation advice and considerations identified by the Project Reference Group. They focused on:

- Concerns about how cross-industry units can be incorporated into the VET system – how they will be managed, maintained and funded through various STA funding approaches
- Challenges around making cross-industry units broad enough to accommodate multiple industries and still relevant for application in specific industries.
- The potential for contextualised delivery of cross-industry units to hinder their recognition or transfer in other industry contexts

- The availability of professional development that supports behavioural change in the training system.

- The value of using triple-bottom line and business benefits arguments for engaging industry in environmental sustainability, rather than scientific or philosophical approaches

- Price-driven delivery approaches impacting on quality of outcomes.

Some stakeholders identified the MSS Sustainability Training Package as the logical home for cross-industry environmental sustainability skills. While this project has not made a recommendation on housing cross-sectoral units of competency, MSS units of competency were considered in the analysis process. Due to their development in a manufacturing industry context, often with an emphasis on lean manufacturing as distinct from environmental sustainability, these units were found to be no more generally applicable than units from a variety of other training packages. The MSS Sustainability Training Package is an important source of sustainability units of competency for specific industry sectors – manufacturing, engineering, scientific testing – but its industry specificity put much of the content outside the scope of this cross-industry project.

5. Impact of change

Potential impacts of the recommended changes have been identified for stakeholders of the VET system as follows:

Industry wide impacts
- Greater capacity to address environmental sustainability, potentially contributing to competitive advantages and new business opportunities for Australian industry, and broader social and environmental benefits

Businesses/employers
- New competitive advantage in some industries where businesses compete with less environmentally sustainable imported products

- Increased capacity to ensure workforce has the capacity to meet future regulatory requirements for environmental sustainability

- Potential for enhancing business reputation as a good corporate citizen and meeting community expectations by addressing environmental sustainability through workforce training

Learners/employees
- Opportunities to enhance future employability through upskilling in areas of likely future demand

Registered training organisations
- Upskilling challenges to ensure trainers and assessors are capable of delivering new training products

- Opportunity to offer new workforce development products in an identified area of need and industry and learner interest

Government

- Improvements in workplace skills to support current and future government policy settings for environmental sustainability, given commitment to international agreements
- Increased flexibility in training product offerings – may require some adjustments to funding arrangements to ensure products are able to meet industry expectations
- Enhanced quality of life at local and global levels, including improved environmental and health outcomes.

Implications of not implementing the proposed changes

The primary implication of not implementing the proposed changes is that the Australian workforce may not develop the skills required to effectively address environmental sustainability. Thus impacting the capacity of businesses and other organisations to respond to social, regulatory, economic and environmental drivers. This impact is compounded by the fact that the cost of remediation of environmental issues is often much higher – for businesses, governments and the community – than the cost of taking a preventive or proactive approach.

A secondary implication is that as pressure to manage this issue grows across different industries, each IRC may develop additional products and create duplication.

How the proposed changes advance the project's priorities

The cross-sector projects aim to address emerging, common skill needs that are relevant across all industries in a way that minimises duplication, reduces system complexity and improves mobility and transferability of skills. This Case for Change has identified significant duplication in units of competency relating to aspects of environmental sustainability. Replacing many of these industry-specific units with cross-industry units has the potential to:

- support transferability of skills
- help to simplify training product options for VET system users
- reduce the level of investment required to maintain the currency of a larger set of industry-specific units.

Estimated timeframes for implementing the proposed changes

The proposed changes will impact numerous industry sectors and involve the review of units across 30 training packages to fully consider their potential for replacement or revision. To accommodate this review activity, it is proposed that a 3-month scoping phase is conducted initially, followed by a 12-month development phase. The development phase will include extensive cross-industry consultation and validation to ensure that new training products are supported and suitable for use in multiple industries.

Links to other cross-sector projects

As the cross-sector projects address skill needs across all industries, it will be important for any crossover between the projects to be identified. However, although environmental sustainability skills may be impacted by other cross-industry skills, such as automation, supply chain skills and teamwork and communication, the common skills identified in this Case for Change are more likely to have interrelationships with industry-specific training package projects that are currently underway, such as current activity in building design and home sustainability, and waste management.

6. Implementing the COAG Industry and Skills Council (CISC) reforms for training packages

The proposed Case for Change has considerable potential to address the focus areas agreed by the CISC skills session in November 2015.

Remove obsolete qualifications from the system
The project has identified the potential to replace a number of industry-specific units of competency with more flexible and current cross-industry units.

Provide more information about industry's expectations of training delivery
The development of cross-industry training products will require supporting information – in the form of Companion Volumes – to clearly articulate expectations for industry contextualisation in delivery and assessment.

Better support individuals to move more easily between related occupations
The development of cross-industry training products will allow individuals to acquire environmental sustainability skills that can be applied in many work roles across many industries. Individuals with skills in a specific occupation or industry may also use the training products to upskill for work in new and emerging roles within their current industry.

Create more units that can be owned and used by multiple industry sectors
The proposed cross-industry training products would be designed for application in a wide range of industries. They will need to be 'housed' in a way that makes them readily identifiable and accessible for use in a range of industry contexts.

Foster greater recognition of skill sets
The Case for Change proposes the review of nine skill sets to enable their use across a wider range of industries to support upskilling and just-in-time skill building at a variety of AQF levels. The visibility of flexible and transferable skill sets will help to increase industry and learner awareness of the benefits of these options for workforce development.

This Case for Change was agreed through resolution of the Project Reference Group.

Name (PRG member)	
Signed on behalf of the PRG	
Date	

7. Attachments

Attachment A: Members of the Project Reference Group

Industry Reference Committee (or Subject matter expert)	Name	Organisation and position
Amenity Horticulture, Landscaping, Conservation and Land Management	Virginia Solomon	Chair Permaculture Australia
Process Manufacturing, Recreational Vehicle and Laboratory Operations	Nigel Haywood	General Manager – Education and Work Skills National Energy Resources Australia
Textile Clothing and Footwear	Kay Gerard	Chief Executive Officer Food, Fibre and Timber Industries Training Council
Gas	Robyn Archer	Manager Learning and Development APA Group
Agriculture and Production Horticulture	Rob Fenton	Head Teacher Lands, Parks and Environmental Management, NSW
Automotive Strategic	Deborah Joyce	Executive Officer Automotive Training Board NSW
Civil Infrastructure	Phillip Cassell	Senior Managing Director Eco Civil Solutions
Property Services	Ray Fogolyan	Chair Australian Building Sustainability Association
Local Government	Billy King	ASU Branch Coordinator Australian Services Union
Sustainability	Michael Grogan	Advanced Manufacturing Growth Centre

Attachment B: Training package components to change

Skills Impact
Date submitted: [insert date]

Table 1: Units of competency recommended for review due to the potential for removing duplication

The units of competency listed below have been recommended for review. In this list, 17 units have been identified as having potential for cross-industry application which would enable the removal of other units currently addressing similar content. The common cross-industry skills areas are referred to in the table as:

- Skill Area 1 – Environmentally sustainable production methods and energy management

- Skill Area 2 – Natural resource management and waste handling

- Skill Area 3 – Consumer/market driven environmental sustainability practices

Responsible IRC	Responsible SSO	TP code	TP name	Product code	Product name	Review status (New or updated)	Change required
Agriculture and Production Horticulture IRC Amenity Horticulture, Landscaping, Conservation and Land Management IRC	Skills Impact	AHC	Agriculture, Horticulture and Conservation and Land Management	AHCAGB508	Improve agricultural sustainability using renewable energy and recycle systems	Review/revise	Review to consider potential for cross-industry use in **Skill Areas 1 and 2, in relation to environmental sustainability policies and systems**
				AHCWRK202	Observe environmental work practices	Review/replace	Review to consider potential for replacement with a cross-industry unit relating to **environmental sustainability skills for entry level jobs**
				AHCWRK511	Develop workplace policy and procedures for sustainability	Review/revise	Review to consider potential for cross-industry use in **Skill Areas 1, 2 and 3**
Meat IRC	Skills Impact	AMP	Australian Meat Processing	AMPA2161	Operate waste recovery systems	Review/replace	Review to consider potential for replacement with a cross-industry unit relating to **Skill Area 2**
				AMPMGT508	Manage environmental impacts of meat processing operations	Review/revise	Review to consider potential for cross-industry use in **Skill Areas 2 and 3, in relation to environmental sustainability skills for supervisors and managers**

Responsible IRC	Responsible SSO	TP code	TP name	Product code	Product name	Review status (New or updated)	Change required
				AMPX410	Facilitate achievement of enterprise environmental policies and goals	Review/revise	Review to consider potential for cross-industry use in **Skill Areas 2 and 3, in relation to environmental sustainability skills for supervisors and managers**
Automotive Heavy Vehicle IRC Automotive Light Vehicle IRC Automotive Strategic IRC	PwC's Skills for Australia	AUM	Automotive Manufacturing	AUMFMM002	Reduce waste in automotive manufacturing work processes	Review/replace	Review to consider potential for replacement with a cross-industry unit relating to **Skill Areas 1 and 2**
Business Services IRC	PwC's Skills for Australia	BSB	Business Services	BSBSUS401	Implement and monitor environmentally sustainable work practices	Review/revise	Review to consider potential for cross-industry use in **Skill Areas 2 and 3 in relation to environmental sustainability skills for supervisors and managers**
				BSBSUS402	Implement an environmental management plan	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 3 relating to environmental sustainability skills for supervisors and managers**
				BSBSUS403	Measure, monitor and reduce carbon emissions	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 3**
				BSBSUS404	Assess, implement, monitor and report on waste management	Review/revise	Review to consider potential for cross-industry use in **Skill Area 2**
				BSBSUS406	Identify and apply sustainability rating tools	Review/revise	Review to consider potential for cross-industry use in **Skill Area 3 in relation to environmental sustainability policies and systems**
				BSBSUS501	Develop workplace policy and procedures for sustainability	Review/revise	Review to consider potential for cross-industry use in **Skill Areas 1, 2 and 3 in relation to environmental sustainability policies and systems**
Construction, Plumbing and Services IRC	Artibus Innovation	CPC08	Construction, Plumbing and Services	CPCCBC5011A	Manage environmental management practices and processes in building and construction	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 1 relating to environmental sustainability skills for supervisors and managers**

Responsible IRC	Responsible SSO	TP code	TP name	Product code	Product name	Review status (New or updated)	Change required
				CPCSUS5001A	Develop workplace policies and procedures for sustainability	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Areas 1 and 2**
Property Services IRC	Artibus Innovation	CPP	Property Services	CPPCLO3011	Clean using environmentally sustainable work practices	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 2 relating to environmental sustainability skills for entry level jobs**
				CPPCMN4001	Develop workplace policies and procedures for sustainability	Review/revise	Review to consider potential for cross-industry use in **Skill Areas 1, 2 and 3**
				CPPCMN4002	Implement and monitor environmentally sustainable work practices	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Areas 2 and 3**
				CPPCMN4009	Develop team understanding of and commitment to sustainability	Review/revise	Review to consider potential for cross-industry use in **Skill Areas 1 and 3 in relation to environmental sustainability skills for supervisors and managers**
				CPPWMT3025A	Monitor contained waste	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 2**
				CPPWMT4002A	Carry out waste audit	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 2**
				CPPWMT5043A	Develop and implement an environmental management strategy	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 3 relating to environmental sustainability policies and systems**
Culture and Related Industries IRC	PwC's Skills for Australia	CUA	Creative Arts and Culture	CUAPPR502	Develop own sustainable professional practice	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Areas 2 and 3 relating to environmental sustainability skills for entry level jobs**
Public Safety IRC	Australian Industry Standards	DEF	Defence	DEFRNG010	Monitor and implement environmental plans and procedures	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 2 relating to environmental sustainability skills for supervisors and managers**

Responsible IRC	Responsible SSO	TP code	TP name	Product code	Product name	Review status (New or updated)	Change required
Food, Beverage and Pharmaceutical IRC	Skills Impact	FDF10	Food Processing	FDFSUG222A	Operate a waste water treatment system	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 2**
Forest Management and Harvesting IRC Timber and Wood Processing IRC Timber Building Solutions IRC	Skills Impact	FWP	Forest and Wood Products	FWPCOR2203	Follow environmental care procedures	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 3 relating to environmental sustainability skills for entry level jobs**
				FWPCOR6201	Manage sustainability in the workplace	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 2 relating to environmental sustainability skills for supervisors and managers**
				FWPCOT4208	Implement workplace sustainability practices	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Areas 2 and 3 relating to environmental sustainability skills for supervisors and managers**
				FWPCOT5207	Implement sustainability in the workplace	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Areas 1, 2 and 3 relating to environmental sustainability skills for supervisors and managers**
				FWPCOT6204	Use carbon accounting to estimate emissions	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 2**
				FWPCOT6205	Prepare and enterprise carbon management report	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 2**
Printing and Graphic Arts IRC	PwC's Skills for Australia	ICP	Printing and Graphic Arts	ICPSUP261	Follow WHS practices and identify environmental hazards	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 2 relating to environmental sustainability skills for entry level jobs**
				ICPSUP323	Dispose of waste	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 2**
Local Government IRC	SkillsIQ	LGA04	Local Government	LGAPLEM602B	Assist in developing an environmental management system for the organisation	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 2**

Responsible IRC	Responsible SSO	TP code	TP name	Product code	Product name	Review status (New or updated)	Change required
Maritime IRC	Australian Industry Standards	MAR	Maritime	MARJ001	Follow environmental work practices	Review/revise	Review to consider potential for cross-industry use in **Skill Area 2 relation to environmental sustainability skills for entry level jobs**
Manufacturing and Engineering IRC	IBSA Manufacturing	MEM05	Metal and Engineering	MEM22007A	Manage environmental effects of engineering activities	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 2 relating to environmental sustainability skills for supervisors and managers**
Process Manufacturing, Recreational Vehicle and Laboratory IRC	IBSA Manufacturing	MSM	Manufacturing	MSMENV172	Identify and minimise environmental hazards	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 2 relating to environmental sustainability skills for entry level jobs**
				MSMENV672	Develop workplace policy and procedures for environmental sustainability	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 2**
Sustainability IRC	IBSA Manufacturing	MSS	Sustainability	MSS014001	Improve sustainability through readily implementable change	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 3 relating to environmental sustainability skills for supervisors and managers**
				MSS014002	Evaluate sustainability impact of a work or process area	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 2 relating to environmental sustainability policies and systems**
				MSS015001	Measure and report carbon footprint	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 1**
				MSS017001	Analyse and determine organisational risk areas in sustainability	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Areas 1 and 2 relating to environmental sustainability policies and systems**
Textiles, Clothing and Footwear IRC	IBSA Manufacturing	MST	Textiles, Clothing and Footwear	MSTGN3007	Monitor and operate trade waste	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 2**
				MSTGN4010	Implement and monitor WHS and environmental systems in the workplace	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 1 relating to environmental sustainability skills for supervisors and managers**

Responsible IRC	Responsible SSO	TP code	TP name	Product code	Product name	Review status (New or updated)	Change required
Water IRC	Australian Industry Standards	NWP	National Water	NWPGEN006	Implement and manage environmental management policies	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 2 relating to environmental sustainability policies and systems**
Process Manufacturing, Recreational Vehicle and Laboratory IRC	IBSA Manufacturing	PMA	Chemical, Hydrocarbons and Refining	PMASUP420	Minimise environmental impact of process	Review/revise	Review to consider potential for cross-industry use in **Skill Areas 1 and 2 in relation to environmental sustainability policies and systems**
				PMASUP620	Manage environmental management system	Review/revise	Review to consider potential for cross-industry use in **Skill Area 1 in relation to environmental sustainability skills for supervisors and managers**
		PMB	Plastics, Rubber and Cablemaking	PMBWASTE302	Coordinate waste disposal	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Areas 1 and 2**
Pulp and Paper Manufacturing IRC	Skills Impact	PPM	Pulp and Paper Manufacturing Industry	PPMENV210	Identify and monitor environmental discharges/emissions	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Areas 1 and 2 relating to environmental sustainability skills for supervisors and managers**
				PPMENV320	Monitor and control environmental hazards	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 2 relating to environmental sustainability skills for supervisors and managers**
				PPMSUS510	Develop workplace policy and procedures for sustainability	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Areas 1 and 2 relating to environmental sustainability policies and systems**
Civil Infrastructure IRC Coal Mining IRC Drilling IRC Extractive IRC	PwC's Skills for Australia	RII	Resources and Infrastructure Industry	RIIENV402D	Implement and monitor environmental policies	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 1 relating to environmental sustainability skills for supervisors and managers**
				RIIENV501D	Implement and maintain environmental management plan	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 3 relating to environmental sustainability skills for supervisors and managers**

Responsible IRC	Responsible SSO	TP code	TP name	Product code	Product name	Review status (New or updated)	Change required
Metalliferous Mining IRC				RIIENV601D	Establish and maintain the environmental management system	Review/revise	Review to consider potential for cross-industry use in **Skill Area 2 in relation to environmental sustainability policies and systems**
				RIISTD301D	Take environmental samples and measurements	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 2**
				RIIWBP401D	Apply and monitor site waste and by-products management plan	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 2**
				RIIWBP601D	Establish and maintain waste and by-product management system	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 2**
Aquaculture and Wild Catch IRC	Skills Impact	SFI11	Seafood Industry	SFIEMS301B	Implement and monitor environmentally sustainable work practices	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Areas 2 and 3**
				SFIEMS401B	Conduct an internal audit of an environmental management system	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 3 relating to environmental sustainability policies and systems**
				SFIEMS501B	Develop workplace policy for sustainability	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 2 relating to environmental sustainability policies and systems**
Food, Beverage and Pharmaceutical IRC	Skills Impact	SUG02	Sugar Milling	SUGEEMP3A	Monitor the implementation of the environmental management program	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 2 relating to environmental sustainability skills for supervisors and managers**
				SUGEIEP2A	Implement environmental procedures	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 2 relating to environmental sustainability skills for entry level jobs**
				SUGPWWT2A	Operate a waste water treatment system	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 2**
Education IRC	PwC's Skills for Australia	TAE10	Training and Education	TAESUS501	Analyse and apply sustainability skills to learning programs	Review/revise	Review to consider potential for cross-industry use in **Skill Area 3**

Responsible IRC	Responsible SSO	TP code	TP name	Product code	Product name	Review status (New or updated)	Change required
				TAESUS502	Identify and apply current sustainability education principles and practice to learning programs	Review/revise	Review to consider potential for cross-industry use in **Skill Area 3**
Rail IRC Transport and Logistics IRC	Australian Industry Standards	TLI	Transport and Logistics	TLIU0001	Develop workplace policy and procedures for environmental sustainability	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 1**
				TLIU2008	Apply environmental procedures to rail infrastructure	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 1 relating to environmental sustainability skills for entry level jobs**
				TLIU4001	Implement and monitor environmental protection policies and procedures	Review/revise	Review to consider potential for cross-industry use in **Skill Area 2 in relation to environmental sustainability skills for supervisors and managers**
				TLIU4011	Apply environmental procedures to rail operations	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 2 relating to environmental sustainability skills for entry level jobs**
				TLIU5006	Conduct environmental audits	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 3 relating to environmental sustainability policies and systems**
Electrotechnology IRC	Australian Industry Standards	UEE11	Electrotechnology	UEENEEK132A	Develop strategies to address environmental and sustainability issues in the energy sector	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 1 relating to environmental sustainability policies and systems**
				UEENEEK145A	Implement and monitor energy sector environmental and sustainable policies and procedures	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Areas 1 and 2 relating to environmental sustainability skills for supervisors and managers**
Gas IRC	Australian Industry Standards	UEG11	Gas	UEGNSG133A	Comply with environmental policies and procedures in the utilities industry	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 2**

Responsible IRC	Responsible SSO	TP code	TP name	Product code	Product name	Review status (New or updated)	Change required
				UEGNSG140A	Apply environmental policies and procedures in the utilities industry	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 2 relating to environmental sustainability skills for entry level jobs**
Electricity Supply Generation IRC	Australian Industry Standards	UEP12	Electricity Supply Industry – Generation Sector	UEPOPS356B	Apply environmental and sustainable energy procedures	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 1 relating to environmental sustainability skills for entry level jobs**
				UEPOPS417B	Monitor and implement environmental plans and procedures	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 2 relating to environmental sustainability skills for supervisors and managers**
				UEPOPS528A	Manage environmental management systems	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 2 relating to environmental sustainability skills for supervisors and managers**
Electricity Supply Transmission, Distribution and Rail IRC	Australian Industry Standards	UET12	Transmission, Distribution & Rail Sector	UETTDREL11A	Apply sustainable energy and environmental procedures	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 1 relating to environmental sustainability skills for entry level jobs**
				UETTDREL13A	Comply with sustainability, environmental and incidental response policies and procedures	Review/replace	Review to consider potential for replacement with a cross-industry unit in **Skill Area 2 relating to environmental sustainability skills for entry level jobs**

Table 2: Skill sets recommended for review to enable cross-industry application

The skill sets listed below have been recommended for review due to their potential for cross-industry application.

Responsible IRC	Responsible SSO	TP code	TP name	Product code	Product name	Review status (New or updated)	Change required
Meat IRC	Skills Impact	AMP	Australian Meat Processing	AMPSS00057	Meat Processing Waste Water Operator Skill Set (Level 1)	Review	Review to consider potential for use across multiple industries Skill set contains units from AMP and NWP
Property Services IRC	Artibus Innovation	CPP	Property Services	CPPSS00052	Develop and Implement Environmentally Sustainable Cleaning Programs	Review	Review to consider potential for use across multiple industries Skill set contains only CPP units
				CPPSS00055	Perform Environmentally sustainable cleaning operations	Review	Review to consider potential for use across multiple industries Skill set contains only CPP units
Culture and Related Industries IRC	PwC's Skills for Australia	CUA	Creative Arts and Culture	CUASS00036	Sustainability Skill Set	Review	Review to consider potential for use across multiple industries Skill set contains units from CUA, BSB, CPC and MSS
Forest Management and Harvesting IRC Timber and Wood Processing IRC Timber Building Solutions IRC	Skills Impact	FWP	Forest and Wood Products	FWPSS00025	Skill Set for Carbon Accounting	Review	Review to consider potential for use across multiple industries Skill set contains only FWP units
Sustainability IRC	IBSA Manufacturing	MSS	Sustainability	MSSSS00006	SS6 Reduce Sustainability Risk	Review	Review to consider potential for use across multiple industries Skill set contains only 1 MSS unit
Aquaculture and Wild Catch IRC	Skills Impact	SFI11	Seafood Industry	SFISS00001	Environment Management Systems Coordinator Skill Set	Review	Review to consider potential for use across multiple industries Skill set contains only SFI units
Tourism, Travel and Hospitality IRC	SkillsIQ	SIT	Tourism, Travel and Hospitality	SITSS00058	Environmentally Sustainable Hospitality and Restaurant Operations	Review	Review to consider potential for use across multiple industries Skill set contains only BSB units

Responsible IRC	Responsible SSO	TP code	TP name	Product code	Product name	Review status (New or updated)	Change required
Education IRC	PwC's Skills for Australia	TAE	Training and Education	TAESS00016	Sustainable Practice Skill Set	Review	Review to consider potential for use across multiple industries Skill set contains only TAE units

Attachment C: Stakeholder consultation method and scale

Name and organisation of stakeholder	Detail method(s) and scale of consultation
Industry experts and IRC members	Targeted phone consultations
Targeted Industry Reference Committees	Call for PRG nominations, via email and SSO liaison, targeting IRC representatives from impacted industries
ACPET AIR CTI Anderson Energy Efficiency Australian Industry Standards AUSVEG Central Regional TAFE CFMEU FFPD Conservation Skills Centre Cotton Australia CQ University Curriculum Management Service Victoria Department of Education and Training Department of Training and Workforce Development (WA) Goulburn Ovens TAFE Hort Innovation Industry Skills Advisory Council (ISACNT) Innovative Business Training Landscaping Victoria Macpherson Kelley Lawyers Matrix Enterprises WA Pty Ltd MINTRAC NESA NSW Department of Primary Industries Northern Metropolitan TAFE Permaculture Australia QFF/RJSA Qld Agriculture Workforce Network	Skills Impact project webpage outlining and updating project, including option for stakeholders to register interest – resulting in a database of 48 interested stakeholders from across a range of industry areas

Name and organisation of stakeholder	Detail method(s) and scale of consultation
River Murray Training Pty Ltd Salford College South Metropolitan TAFE South Metropolitan TAFE Sunraysia Institute of TAFE Swinburne University of Technology TAFE TAFE NSW TAFE NSW Illawarra The Fred Hollows Foundation Tocal College Westplan Design	
Skills Impact, PRG and SSO stakeholders	Draft report disseminated by PRG members and through Skills Impact and other SSO communication channels

Animal Pest Management Services
Australian Association of Progressive Repairers
Australian Taxation Office
AUSVEG
Cotton Australia
Department of Parliamentary Services
Dianne Fullelove & Associates Pty Ltd
DXC Technology
Eco Civil Solutions (Qld) Pty Ltd
Horse SA
Horticulture Innovation
Hyne Timber
Innovative Business Training
KnowIT Group Pty Ltd
Melbourne Polytechnic
Northern Metropolitan TAFE
NSW Department of Primary Industries
Nucrush Group
Safety Training Professionals
	A total of 26 individual online survey responses on the draft report were received from the following industries:
	   o Agriculture, Production Horticulture
	   o Amenity Horticulture, Sports Turf, Landscaping, Conservation
	   o Automotive
	   o Business Services
	   o Civil Construction
	   o Forestry, Timber
	   o Horse, Animal Care
	   o Information Technology
	   o Maritime
	   o Mining, Extractive, Quarrying
	   o Safety
	   o Seafood
	   o VET sector
	   o Wealth and Finance.

Name and organisation of stakeholder	Detail method(s) and scale of consultation
Seafood Training Tasmania (Inc) TAFE NSW Thiess	
Curriculum Maintenance Manager Victoria (MSS TP)	Emailed feedback on draft report