Industry Skills Forecast and Proposed Schedule of Work Automotive

Automotive

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May 2018



Private & Confidential

28th May 2018

Industry Skills Forecast and Proposed Schedule of Work

Across the vocational education and training (VET) sector there are over 4000 training providers educating approximately 4.2 million students, delivering 3.7 million program enrolments across 30.1 million subject enrolments. The responsibility to ensure students learn work ready skills that meet industry needs cannot be understated. This gives learners the chance to make an impact when they enter the workforce and upskill or reskill throughout their working lives; the VET sector is key to ensuring Australia remains at the forefront of global competitiveness and supports continued economic prosperity.

The role of the Automotive Industry Reference Committees (IRCs), supported by PwC's Skills for Australia, is to put industry at the heart of Australia's qualifications and training system. The Automotive IRCs, oversighted by the Australian Industry and Skills Committee (AISC), sets the standard for recognised skills and seeks to realise the value of the national system.

The 2018 Industry Skills Forecast and Proposed Schedule of Work details the training product priorities for the IRC through to June 2022. These priorities are developed in response to the identified skills and knowledge needs of the workforce, which are translated into the learning requirements set out in training products. The insights and recommendations within this document are based on analysis of both historical and current data, extensive industry consultation, input from IRC members, broader stakeholder engagement activities, State Training Authorities and public feedback. Underpinning this approach is a focus on the future of skills needs in the context of Australia's economic and workforce trends, considering how disruptive forces are likely to change vocational skills needs and demands.

Accessing vocational education and training and increasing recognition of skills should be a process that is both simple and effective. The Automotive IRCs and PwC's Skills for Australia will continue to strive to enhance Training Packages to meet the needs of industry and better skill our workforce.

Yours sincerely,

Jora Calo

Mark Czvitkovits

Dale Henry

Chair

Aller

Sara Caplan CEO PwC's Skills for Australia

Automotive Strategic IRC

Chair

Geoff Gwilym



Nigel Muller

Chair

Automotive Vehicle Body Repairs IRC

Chair

Automotive Heavy Vehicle IRC Bruce Chellingworth

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Chair

Automotive Allied IRC



Executive summary

The Automotive Retail, Service and Repair (AUR) and Automotive Manufacturing (AUM) Training Packages are critical elements in the Vocational Education and Training (VET) system, playing central roles in the training of learners that engage in the automotive industries. A productive and valuable Automotive Training Package is essential in providing learners with work ready skills for the labour force and flexible training pathways to gain new skills to progress their careers and employability.

The role of VET in the Australian automotive industry must evolve in response to emerging market demand for reskilling and training. Key trends impacting the automotive industry and, subsequently, the automotive workforce, include:

- Technological developments of the equipment used to service and repair vehicles as well as the vehicles themselves that must be reflected in the content of vocational training.
- Structural changes within the industry and workplaces has led to changing workforce demand, in particular the decline of the automotive passenger vehicle manufacturing industry.
- Changing consumer preferences has resulted in increased demand for certain sub-sectors within the industry such as marine and motorcycle.
- Legislation, in particular consumer rights and climate change that must be reflected in the content of vocational training.
- Learner cohort changes is placing pressure on the VET workforce to meet an array of learner needs and ensure workers have the requisite foundational skills to meet industry needs.

The AUR and AUM Training Packages must evolve to reflect these changes. For example, there will be an increased demand for workers in growth industries, workers will need a strong digital literacy baseline to operate on more technical vehicles and equipment, and they will need to have the skills to engage effectively with consumers. Indeed, if appropriately skilled to meet changing demand trends, AUR and AUM graduates will have the opportunity to flourish within the automotive sector. To ensure this opportunity is met, it is essential that the AUR and AUM Training Packages are appropriately configured.

In response to these drivers for change, the Automotive Industry Reference Committees (IRCs) have proposed a review of the AUR and AUM Training Packages. The parameters of the review will include an assessment of the structure and content of the AUR and AUM Training Packages to ensure learners are appropriately prepared for job roles and workplaces of the future. This Industry Skills Forecast and Proposed Schedule of Work (ISFPSW) provides the basis for the review and the need for the Training Package to accurately reflect current and future job roles. This is delineated in the following segments:

- 1. **Sector Overview** This section outlines the parameters of the automotive workforce, including where individuals in the sector are employed, the activities undertaken, and the challenges and opportunities faced by learners and workers.
- 2. **Employment and Skills Outlook** Current and future employment projections in the automotive sector and factors that may influence the supply of graduates to fill these positions are discussed to understand future supply and demand within the sector. The skills needs and job roles of these learners and workers are considered through a lens of the trends affecting the industry as a whole. This assessment is central to informing an understanding of future job roles and necessary skills needs within the sector more broadly, as well as the specific elements that may need inclusion in the Training Package.

- 3. **Key Drivers for Change and Proposed Responses** This section serves as the Case for Change for AUR and AUM projects scheduled in 2018-19. It outlines the factors driving change in the automotive industry, including technological developments, changing consumer requirements and structural changes within the automotive manufacturing industry. These factors are changing the current and future job roles of the automotive workforce and the AUR and AUM Training Packages must be updated to reflect the skill and capability requirements of the job roles.
- 4. **Proposed Schedule of Work** The implication of the trends and drivers affecting the automotive industry is necessary modifications to the AUR and AUM Training Packages. Drawing on the above analysis of trends and skills needs, the Proposed Schedule of Work articulates the training product development priorities within the Training Packages. The purpose of the schedule is to ensure that learners are appropriately skilled to enter a sector affected by the above trends. A summary of this schedule of work is presented in Table 1 below.

Year	Project code	Project name	Units in scope	Primary IRC
Total Uo	Cs in scop	e in 2016-17	59	
2017-18	1g	Vocational preparation	38	Strategic
2017-18	1h	Automotive servicing	10	Strategic
2017-18	1i	Advanced qualifications	29	Strategic
2017-18	1m	Heavy vehicles training	77	Heavy Vehicle
2017-18	1n	Bus, truck, trailer manufacturing (Certificate II)	17	Heavy Vehicle
2017-18	1p	Light vehicle certificate IIs	9	Light Vehicle
2017-18	1q	Air conditioning training	10	Light Vehicle
2017-18	1r	Automotive management	10	Allied
Total Uo	Total UoCs in scope in 2017-18			
2018-19	15	Body repair qualifications 1	44	Vehicle Body Repair
2018-19	1X	Automotive manufacturing	27	Strategic
2018-19	1t	Marine training	35	Allied
2018-19	1u	Motorcycle training	23	Allied
2018-19	1V	Light vehicle qualifications 1	71	Light Vehicle
Total Uo	Cs in scop	be in 2018-19	200	
2019-20	1W	Passenger vehicle manufacturing	29	Light Vehicle
2019-20	1aa	Body repair qualifications 2	77	Vehicle Body Repair
2019-20	1ab	Light vehicle qualifications 2	60	Light Vehicle
2019-20	1ad	Sales and admin qualifications	24	Allied
2019-20	1af	Outdoor power equipment	17	Allied
2019-20	1ag	Motor sport training	45	Light Vehicle
2019-20	1ah	Bicycle training	29	Allied
Total Uo	Cs in scor	e 2019-20	281	

Table 1: Summary of 2018-19 Schedule of Work

Year	Project code	Project name	Units in scope	Primary IRC
Total UoCs in scope over 4 years			740	



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1 Sector Overview

1.1 The sector at a glance

The automotive industry encompasses a broad range of individuals and organisations involved in activities such as the manufacture, repair, service and retail of vehicles, parts and tools, and the repair, maintenance and service of bicycles, marine vessels and outdoor power equipment. It is pivotal to the Australian economy, businesses and individuals, touching the lives of all Australians. The automotive industry contributes \$37 billion to the Australian economy and employs 321,700 individuals.¹ Please note that determining the parameters of the automotive industry is difficult given the breadth of activities that take place within the various sectors.

The Australian automotive industry is in the midst of a transformation, with the exit of local passenger vehicle manufacturers, changing consumer preferences and the emergence of new technologies altering the structure of the industry. As these trends are set to continue, the AUM and AUR Training Packages will play an important role in ensuring learner skills are kept up to date and that workers are well equipped to move between roles as the industry adapts to these changes. This has been reflected in NCVER data showing automotive and engineering represented the biggest increase in trade commencement (up 16.8 per cent) for the September 2017 quarter.²

Sector descriptions

The automotive industry is defined, for the purposes of this ISFPSW, as all sectors related to training in the AUM and AUR Training Packages. These are shown in Figure 1.



Figure 1: Automotive Industry Sectors

Source: PwC's Skills for Australia analysis

¹ Based on 2015-2016 Manufacturing industry by ANZSIC class employment data.

² Apprentices and trainees 2017 – September quarter, published by the National Centre for Vocational Education Research (NCVER)

1.2 Automotive Strategic IRC

Automotive cross sector

The Automotive Strategic IRC sets the direction for qualifications that skill learners to work across multiple sectors. This style of cross-sector engagement is of growing importance in the automotive industry given the need for labour mobility within the industry and an adaptable workforce that can work within the changing environment.

1.3 Automotive Light Vehicle IRC

Automotive Electrical

Workers in the automotive electrical sector engage in the installation, service, repair and overhaul of electrical systems and components within vehicles and machinery. Automotive mechanics are increasing their provision of electrical servicing options and motor vehicle dealers with close links to manufacturers encourage customers to return to them to resolve more complex issues, automotive electricians will need to adapt. Many automotive electricians will require upskilling and will need to forge links with dealerships to invest in capital equipment and stay abreast of the latest technological advancements.

Manufacturing (Passenger Vehicle)

Local passenger vehicle manufacturing operations were closed in Australia at the end of 2017. Many former workers will need to reskill and enter into different areas of the automotive industry, or transition into new industries entirely.

Mechanical and Specialisation

Workers in the mechanical and specialisation sector provide light vehicles with service and repair work. Whilst inspect and service activities comprise a large portion of work undertaken in the sector workers are also expected to diagnose faults and repair/replace components. The increasingly sophisticated technology behind newer cars means that businesses will need to ensure that equipment and staff training are updated to compete with the service centres of dealerships, which typically have more diagnostic equipment.

1.4 Automotive Heavy Vehicle IRC

Mechanical Heavy Vehicle

Heavy vehicle workers are typically employed in several central industries. Key segments of the sector include: Mobile plant machinery (mining and construction); Heavy commercial vehicles (road transport); and Agricultural machinery. Businesses typically hold a small share of the market and specialise their operations towards particular machinery, markets or locations. As a result, businesses tend to be small, though there are several large businesses in the road transport space. The increasing uptake of electronic technology components in trucks and commercial vehicles has expanded the industry's specialised services offerings. These advances require more advanced capabilities within the sector and new safety requirements.

Manufacturing (Bus, Truck and Trailer)

The sector can be broken down into 3 primary segments: Bus manufacturing, Truck manufacturing and Vehicle Body and Trailer Manufacturing. Bus and truck manufacturing businesses are all subsidiaries of foreign owned companies, whereas vehicle body and trailer manufacturing businesses are largely Australian owned. The locations of businesses within the sector are correlated to major markets, with high representations in Victoria, Queensland and New South Wales. Particular growth opportunities include demand for lighter vehicles and growth in the export of specialised vehicles.

1.5 Automotive Vehicle Body Repair IRC

Vehicle Body Repair

Vehicle body repair workers engage in activities such as vehicle body repair, vehicle refinishing, windscreen repair, automotive trimming, and other services. Businesses in the sector are largely sole proprietors and small businesses. A number of factors are making the sector increasingly competitive and complex. These include the rising cost of imported materials, capital expenditure increases to accommodate compliance requirements and the impact of significant technological change. These trends have resulted in business consolidation and rationalisation across the sector, movement towards adoption of Small and Medium Area Repair Techniques (SMART) and establishment of partnerships with insurers.

1.6 Automotive Allied IRC

Bicycles

Workers in this sector sell, service and repair bicycles, parts and accessories. The sector has many small players, with independent and specialist bicycle retailers accounting for just under half of bicycle and accessory sales. There are a number of emerging opportunities in the sector, particularly for small businesses, including engagement with electric bikes and personal mobility devices, such as motorised wheelchairs, scooters and associated equipment.

Outdoor Power Equipment

Workers and businesses in the sector provide sales, service and repair work for outdoor power equipment. This equipment includes items such as, lawnmowers, chainsaws, concrete polishers, brush-cutters, jack hammers, generators and pressure pumps. The sector is facing a number of challenges including technological change, emissions regulations, an ageing workforce, and lower economic incentives for workers. However, there are a number of sector opportunities including: capitalisation on an increasingly technologically advanced skill base by diversifying into other forms of battery electric equipment and vehicles; and the trend towards the repair of outdoor power equipment items, as opposed to replacement.

Marine

Workers engaging in this sector operate on small commercial vessels and pleasure vessels up to 100 feet long. Historically, the sector has largely been comprised of small Australian owned businesses and sole proprietors. Marine service activity is likely to be concentrated in areas with a high proportion of retirees and a favourable climate. As a result, trends such as Australia's ageing population and their accumulation of wealth following strong superannuation and property has, and will likely continue, to result in growth for the sector.

Motorcycles

Workers in this sector sell, service and repair motorcycles, scooters and all-terrain vehicles (ATVs), as well as the associated parts and accessories. The sector is dominated by a few brands with a multitude of independent and specialist retailers that hold franchising agreements with these major players. The sector is facing a number of challenges including technological change, emissions regulations, and a shift in consumer preferences towards lower-value used motorcycles. However rising fuel prices are causing consumers to turn towards more fuel efficient modes of transport causing overall industry revenue projections to show growth in the sector.

Sales, Parts, Administration and Management

Workers in the sales, parts, administration and management segment of the automotive industry buy and sell automotive vehicles and parts, and engage in the administration and management of businesses. Training for the sector is provided under the AUR Training Package, with relevant certificates and diplomas encompassing topics in the fields of automotive administration, automotive sales and automotive management. The biggest segments of the sector include: car retailing; fuel retailing; motor vehicle and new parts wholesaling; and motor vehicle parts retailing.

1.7 Overview by location

To understand the complexity of this broad industry, it is important to consider the industry through a state and territory lens. Key differentiating factors between the states and territories include:

- **Demographics.** The majority of Australians engage with the automotive industry. As a result, there are job opportunities for workers in the industry across Australia, reflecting the correlation between population and motor vehicle registration distribution. This is mirrored in employment statistics, with employment concentrated in areas with larger populations and major markets.
- Location of large industries. Whilst the majority of jobs are distributed across states, employment for some sectors is high in certain locations due to the prevalence of related industries. This is evident in the automotive electrical sector, where a number of businesses and jobs are concentrated in states with a high amount of mining activity.

Figure 2 below shows the current geographical distribution of domestic learners currently enrolled in the Automotive Manufacturing and the Automotive Retail, Service and Repair Training Packages, alongside the distribution of employment in typical automotive occupations.



Figure 2: Geographic spread of workers and learners

Note: Excludes all enrolments in Certificate II qualifications. The automotive sector has been defined by 6 unit level (4 digit) ANZSCO occupations. This definition has been based upon ANZSCO qualification classifications, taxonomy mapping and occupational outcomes of AUR and AUM qualifications. N.B Employment in the automotive sector cannot be directly defined by the ANZSCO classification of qualifications these are at the 6 digit ANZSCO level but state-by-state employment data is only available at 4 digit level. Note 2: Learner enrolment data presented based on learner location – students who were located in other Australian territories or dependencies, overseas or not known were not included in the percentage calculations.

Source: ABS (November 2017) Labour Force, Australia, Detailed, Quarterly, cat. no. 6291.0.55.003, NCVER (2017) Total VET activity 2016

The volume of learner enrolments tends to correlate with the level of industry employment. New South Wales has the highest level of industry employment at 31 per cent, a figure which is supported by strong growth in vehicle numbers. Conversely, the Northern Territory has the lowest levels of industry employment, correlating with a decline in vehicle numbers. Victoria and South Australia are undergoing a period of transition following the closure of passenger vehicle manufacturing operations in 2017. Both states have launched programmes to support workers and businesses to transition into new areas. Queensland has high levels of employment and activity in some sectors including, marine and automotive electrical, with many learners completing second apprenticeship programmes reflected in the high volume of learner enrolments.

1.8 Training Package profile

There are two Training Packages that contain qualifications and units of competency (UoCs) relevant to the automotive industry. There are 7 qualifications in the AUM Training Package and 57 qualifications in the AUR Training Package (see Table 2, noting that Table 2 includes superseded qualifications that still have learners enrolled). Of the 4.2 million learners enrolled in vocational education qualifications in 2016, **there were 590 learners enrolled in the AUM Training Package** and **55,001 learners enrolled in the AUR Training Package** comprising 1.1 percent of all learners.³

There were 14 per cent fewer enrolments into the AUM Training Package in 2016 when compared to 2015, this is largely driven by a 29 per cent decrease in enrolments for Certificate II level qualifications. There were 5 per cent fewer enrolments into the AUR Training Package in 2016 when compared to 2015: 5 per cent fewer enrolments in Certificate I and II level qualifications, 4 per cent fewer enrolments in Certificate III level qualifications.

1.9 Automotive Industry Stakeholders

PwC's Skills for Australia intends to engage a wide range of stakeholders relevant to the automotive industries. Given the diversity of activity undertaken in the industry, the regulatory and licensing requirements for each sector vary significantly. For example, New South Wales and Western Australia have the most occupations requiring a license, which reflects the high percentage of learner enrolments in these states Figure 2 -Geographic spread of workers and learners. A detailed list of stakeholders to be consulted per 2018-19 project can be found in Section 4.

1.10 Employer challenges and opportunities

Drawing from existing employer surveys, such as the NCVER (2017) *Survey of Employers' Use and View of the VET system 2017*, and ongoing consultation with employers, we are hearing four key messages from employers in the automotive industry sectors:

1. Skills relating to emerging technologies are in high demand

The automotive industry is changing due to the proliferation of new technologies. These technological innovations are changing vehicle compositions, the way automotive services are delivered and the requirements placed on the industry to meet consumer needs. These changes are placing pressures on the automotive industry to provide suitably trained and experienced workers to engage with the technology, particularly in the service and repair stage of the supply chain. In this environment, the AUM and AUR Training Packages will play a critical role in ensuring that learners are gaining access to the technological skills they need to meet this demand and assist the automotive industry to develop alongside technological advances.

2. Diagnostic skills are lacking across the industry

The inconsistency of diagnostic abilities within learners who have completed Certificate III level qualifications is a prevalent theme across all industry sectors. The perception from industry is that the Training Packages are not sufficiently developing these skills within learners despite the high volume of 'Diagnose and Repair' units learners are required to complete.

The skill of diagnosing a fault requires a number of underlying skills, for example:

- Digital Literacy in order to use a diagnostic scanning tool.
- Literacy in order to read a manual and interpret a fault code.
- Logical thinking in order to categorise the multitude of faults that could be creating the fault code and identify the most appropriate next steps.

³ Enrolment data has been used to estimate learner numbers. This may represent a slight overestimate of the number of learners in AUM and AUR, as it is common for some learners to enrol across courses and transfer between them. Source: National Centre for Vocational Education Research (2016) Total VET activity, enrolments and completions; Training.gov.au

- Technical writing in order to record the outcomes of diagnostic tests and provide evidence of the time spent diagnosing a fault.
- Data analysis to analyse the outcomes of the diagnostic tests and record information accurately.

These underlying skills are not sufficiently developed within the qualifications, subsequently learners are finding it difficult to transition from 'inspect and service' tasks to 'diagnose and repair' tasks as there are not enough steps to bridge the gap between these two job roles.

1. Skilled worker shortages exist across a number of sectors

Across the automotive industry, a number of sectors are facing skills shortages, resulting in businesses being unable to find sufficient numbers of qualified workers. Amongst other things, this can lead to delays in service and workflow disruptions. Advice from IRC Members is that skill shortages are the result of the advancement of technology that requires learners with better STEM skills, however, this is not the perception held by schools and the community and lower STEM skilled candidates are steered into the industry. Additionally, training providers struggle to stay abreast of new technology, in regards to both teacher capability and learning resources.

2. The automotive industry is increasingly supporting labour movement

The departure of local passenger vehicle manufacturers and technological advances are key factors that are putting pressures on businesses and driving structural changes within the industry. There is an increased focus on cross-sector employment, critical for new entrants, as well as skilled workers transitioning in their careers. An adaptable workforce will enable the industry to continue to evolve and take advantage of the changing environment. Lateral movement within the industry is an opportunity to attract new entrants who want flexible career options.

1.11 Learner challenges and opportunities

It is also important to understand which aspects of training are serving learners well and which aspects can be improved. Drawing from the VET Student Outcomes survey, there are two key messages:

1. Learners are graduating with knowledge and capabilities that make them employable

Learners complete training equipped with capabilities that make them attractive in the job market. This is represented by 91.2 per cent of AUR and 97.5 per cent of AUM graduates being employed after training.⁴ The majority of AUR and AUM qualifications are completed as apprenticeships where the learner is employed as they progress through the qualification, thus the finding that the majority are employed after training is unsurprising.

The finding that only 51 per cent of surveyed AUR graduates were employed in the occupation that mapped to their training likely reflects the limitations associated with the one-to-one mapping of qualifications. This limitation is illustrated by the fact that an automotive technician moving from an independent mechanical repair workshop to a dealership workshop is recorded as "changing industries", despite remaining in a very similar job role, and may therefore not be recorded as in a related job.

2. Few learners engage in further formal training

AUR and AUM graduates do not tend to go on and do further study after training, with only 19 per cent of AUR and 11 per cent of AUM graduates undertaking further study.⁵ These figures reflect industry feedback that the majority of learners who do upskill, tend to do so through in-house training, however this may change in years to come with an emphasis on upskilling to cater for new technologies.

⁴ National Centre for Vocational Education Research (2017), Australia Vocational Education and Training Statistics: VET Student Outcomes

⁵ National Centre for Vocational Education Research (2017), Australia Vocational Education and Training Statistics: VET Student Outcomes

1.12 Opportunities for collaboration across industry sectors

Training Packages are not always developed in a way that recognises the importance of skills in multiple sectors and enables them to be used to their full potential in various industry contexts. The AISC has identified several cross sector skill areas where opportunities exist to create flexible and transferable package components that will benefit industry, learners and the broader VET sector.

PwC's Skills for Australia has been commissioned to develop Training Package components that address skill needs across industries in four cross sector skill areas: Cyber Security, Big Data, Teamwork and Communication, and Inclusion of People with Disability in VET. The expected outcomes of these cross sector projects include:

- significant reduction in the level of duplication across the national training system;
- · better support for individuals to move between related occupations; and
- improved flexibility and efficiency in Australia's VET system.

Table 6 below identifies opportunities for linkages between existing cross sector project work and the AUR and AUM Training Packages.

Table 2: Training development opportunities across industry sectors

Cross sector projects	Project description	Link to Automotive Training Package
Automation	Automated processes and the use of robotics, drones and remote operations systems.	Increased awareness of automation will be included in relevant UoCs, particularly on remote access systems.
Big Data	Data management, data analytics and data driven decision-making. Businesses are placing growing emphasis on the capture, storage and utilisation of this data, particularly with regards to decision-making and marketing.	May impact current sales UoCs as consumer data is used to improve marketing and sales techniques.
Cyber Security	Information security, data protection and privacy.	The increasing use of the internet and wireless technology will result in new cyber security challenges. This will affect computer equipment that can be plugged in to vehicles and require access to the vehicles systems. It will also affect sales and administration staff who will need to be aware of the security implications of cyber hacking given the personal details of consumers that will be stored on computer systems.
Digital Skills	Digital literacy; 3D printing/additive manufacturing; and coding skills.	New UoCs will be particularly relevant to the AUR and AUM Training Packages as digital literacy becomes a pre-requisite to working in the industry and existing workers require upskilling.
Environmental Sustainability	Environmentally friendly products, manufacturing and waste processes, and sustainable energy production.	New UoCs will be relevant to the AUR and AUM Training Packages, particularly relating to emissions law and waste processes.

Cross sector projects	Project description	Link to Automotive Training Package
Inclusion of People with Disability in VET	Building the capability of educators and employers to promote inclusion of people with disability in vocational education, training and employment.	People with disabilities are consumers within the automotive industry, it is therefore important that the AUR Training Package prepares learners to communicate effectively with this consumer group. People with disabilities may also form part of the sales or administration teams within the automotive industry.
Online consumer engagement and social media	Cultural awareness, customer service, marketing, communication and social media skills.	Any relevant UoCs created will be imported into relevant management and sales training.
Teamwork and Communication	Developing common teamwork and communication units that can be contextualised across various industries.	Communication skills are becoming more important as consumers become more informed. Any relevant UoCs created will be imported into relevant AUR and AUM qualifications.
Cross sector projects	with no identified overlap with A	UR and AUM Training Packages
Supply Chain	Traditional supply chain management practices as enabling services for the economy have recently been enhanced by technology.	Currently no identified overlap, however any unit created as part of the project will be considered for importation into the AUR or AUM Training Packages where they are relevant and required by the industry.

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2 Employment and Skills Outlook

The purpose of this section is to provide a broad overview of the magnitude and growth of employment in the automotive industry, and to discuss the factors which are likely to influence the supply of learners to fill positions in the sector. It provides context for the detailed analysis of trends influencing the industry, which flows through to skills priorities and training needs.

2.1 Sector employment outlook

Given the breadth of the automotive industry, it is relevant to consider employment trends and subsequent learner opportunities in each of the individual sectors.

- **Marine** the marine sector is forecast to see employment growth in the next few years, particularly in the number of marine technicians. Queensland, New South Wales and Victoria states that already have a strong sector presence are projected to account for a significant portion marine technician growth.
- **Bicycle** –there is a shortage of skilled bicycle technicians within the bicycle sector. The shortage presents as a challenge to the sector as it constrains the capacity of businesses to meet demand. The shortage of bicycle technicians is projected to continue over the medium-short term.
- Vehicle body repair two occupations in the sector are facing skill shortages: vehicle body repair technicians and vehicle refinishing technicians. These shortages are expected to persist over the medium to long-term, exacerbated by industry growth. New South Wales, the Australian Capital Territory, Victoria and Western Australia are projected to have the greatest skills shortage.
- **Manufacturing (bus, truck and trailer)** no labour shortages forecast with employment in the sector expected to remain stable. This is despite the challenges facing the industry, such as import penetration, decreased economic activity and supply uncertainty.
- **Outdoor power equipment** there are skilled labour shortages within the outdoor power equipment sector. These shortages are prominent for high level technicians and entry level apprentices, with most shortages occurring in New South Wales, Victoria and Queensland.
- Sales, parts, administration and management two skilled occupations within the sector are in shortage: motor vehicle parts interpreters, and motor vehicle salespersons. It is projected that the shortages for motor vehicle parts interpreters are spread between New South Wales, the Australian Capital Territory, Victoria, Queensland, South Australia and Western Australia, whilst motor vehicle sales person shortages are largely in New South Wales, the Australian Capital Territory and Queensland.
- **Mechanical and specialisation** there is currently a shortage of light vehicle mechanical technicians and motorcycle repair technicians within the sector. Forecasts over the medium term indicate that demand for these skills is likely to increase.
- **Heavy vehicle** employment in the heavy vehicle sector has grown over the past 5 years and, based on industry forecasts, employment growth is expected to continue through to 2019/20. However, currently there is a shortage of heavy vehicle technicians within the sector.
- **Automotive electrical** the electrical sector is projected to see employment growth for automotive electrical technicians across Australia from 2016-20, particularly in New South Wales, the Australian Capital Territory, Queensland, Victoria and Western Australia. Analysis, however, indicates that there is an existing shortage for this occupation

2.2 Occupational employment outlook

Employment projections at an industry level are confined to specific industry definitions (industries in employment statistics are standardised as defined by ANZSIC).^[1] Viewing the automotive industry as a set of related occupations serviced by the Training Packages is more consistent with both the view of employers and the definitions used in this Industry Skills Forecast and Proposed Schedule of Work. The automotive industry, as defined by the occupations related to the Training Packages, collectively employs over 300,000 Australians. Since the analysis of employment by occupation is complicated by the need to refer to a large number of occupations, which may be quite different in nature, the analysis in Table 2 is focused on a categorisation of occupations. However, it should be noted that, as the categories adopted are broad, it may be the case that some workers have been trained in other Training Packages.

Table 3:	Projected	employment	levels for the	automotive and	l related	industries	occupations
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Occupation	Employment level May 2017 ('000)	Projected employment level May 2022 ('000)	Projected employment growth – five years to May 2022 (%)
Motor Vehicle and Motor Vehicle Part Manufacturing	47.4	19.6	-58.5
Motor Vehicle and Motor Vehicle Parts Wholesaling	22.9	23.2	+1.1
Motor Vehicle Retailing	77.1	84.9	+10.1
Motor Vehicle Parts and Tyre Retailing	29.8	30.7	+2.8
Fuel Retailing	34.4	35.5	+2.9
Motor Vehicle and Transport Equipment Rental and Hiring	15.9	17.8	+11.8
Automotive Repair and Maintenance	145.1	145.1	+0.0

Source: Department of Jobs and Small Business (2017). 2017 Occupational Projections – five years to May 2022

Note 1: the occupations displayed in the above table are identified as the most relevant occupations to the automotive industries sector. The categories do not represent an exhaustive list of all occupations in the sector, nor do they represent occupations which are only relevant to the sector.

IRC commentary suggests the projected employment levels outlined in Table 2 are not an accurate depiction of the future of the automotive industry - IRC experience has suggested growth in other sub-sectors of the industry results in growth in the repair and maintenance sector. It was also noted that the 'occupation' descriptions above are in fact sub-sector descriptions as there are a variety of occupations within each of the noted 'occupations.' IRC members acknowledged these projections may have been developed based on projected increases in electric and newer vehicles that may have reduced servicing requirements. However, it is important to note that the codification and collection of data on the automotive industry is extremely difficult given the wide variety of roles within the sector, thus, the results above may not present an accurate forecast of the industry.

2.3 Trends shaping the sector

This section outlines **four key trends** shaping the automotive workforce over the medium to long term, emphasis is placed on trends that relate to the industry as a whole, rather than for individual sectors.



The AUR and AUM Training Packages will play an important role in enabling VET learners to upskill or gain niche skills to successfully navigate this challenging environment and make the most of opportunities arising from growth sectors. However, given the breadth of the industry and the range of sectors that are encompassed within it, not all trends apply equally to all sectors.

Technological change

Technological change is a major source of both disruption and opportunity in the automotive industry. Technological innovations are changing vehicle compositions, the way automotive services are delivered and the requirements placed on the industry to meet consumer needs. Technology is not just affecting one component of the industry, it is changing all tasks and roles throughout the entirety of the automotive supply chain as outlined below:

1 New technology is changing the way workers carry out repairs.

This requires all workers to have increased technical acumen as manufacturers specify the need for increasingly technical equipment in order to complete repairs. For example, nearly all diagnostic work is completed using a diagnostic scanning tool – all learners/workers must be able to use, read and interpret this equipment. The requirements for businesses to have new technological equipment, software and machinery means that it is more expensive for businesses to operate in the automotive industry which may result in some business consolidation.

2 Vehicles themselves are becoming more advanced as more and more computer software is built into vehicles.

As manufacturers continue their pursuit for self-driving cars, more and more autonomous vehicle technology is entering the market. So far this pursuit has brought consumers active parking assist, advanced cruise control and autonomous emergency braking systems. A connected car is a car that is equipped with internet access, and usually also with a wireless local area network. Newer cars can run their own diagnostics and advise the owner to take the vehicle for servicing, this technology is becoming commonplace in both the light and heavy vehicles market. In the future, vehicles may be able to diagnose their own faults and be assisted by robot technologies to repair issues – the rate of change within the automotive industries could result in these technologies being available in the near future.

3 The way the industry engages with customers and their use of technology is changing

There is an emerging trend of shopfronts with digital interfaces, as opposed to large dealerships – this pertains to the administration and retail side of the industry as well as consumer convenience. This trend will be most relevant in metropolitan areas where the cost of retail storefronts is high and the internet can facilitate smaller store fronts so vehicles will not need to be stored on site. Consumers are also able to use augmented reality to test drive vehicles. Phone applications can be used to book a servicing appointment or even call a mobile mechanic to service the vehicle at a more convenient location.

The automotive industry is faced with the challenge of staying in line with new technology that is emerging in the market, as well as providing technicians that are trained to cater for these products. The interconnectedness of the industry means that a technological change in one sector will likely have a concurrent impact on another area. Table 3 summarises some of the technological innovations in the sectors relevant to AUR and AUM graduates.

Sector	Examples of technological change
Manufacturing (bus, truck and trailer)	Changes in materials (movement towards lightweight) have necessitated different production methods and technologies.
Bicycle	 Introduction of technologies that are incorporated into bicycle design – for example, wireless gear shifting. Emergence of electric bicycles that are designed to include batteries. Technological advances in the service and repair of bicycles – for example, stress detection technologies that employ thermal scanning.
Marine	• Increasing engine and equipment technology advances. For example, cable-less throttle systems.
Outdoor power equipment	 Battery capability enhancement stemming from battery technology evolution. Environmental and emissions regulations are leading to the development of technologies that require more advanced service and repair skills, as seen with fuel injection technologies.
Automotive electrical	 Evolution of hybrid and battery electric vehicle technology has led to a greater need for specialised automotive electrical services. Increased computerised software within vehicles such as wireless and Bluetooth technology.
Vehicle body repair	• As a consequence of improved technologies in modern vehicles, vehicle body repair technology has seen commensurate advancement such as the use of high strength steels.
Mechanical heavy vehicle	 Advances in repair technologies, for example, autonomous and semi- autonomous guidance systems such as self-steering. The use of guidance and telematics systems. Additional safety requirements are necessary due to the increased hazard of engaging in work on hybrid electric componentry.
Sales, parts, administration and management	 Computerised systems for inventory management, sales processing, and expenditure information. Online avenues used for advertising and marketing.
Mechanical and specialisation	• New technologies in modern vehicles requiring a knowledge of both electrical and mechanical systems complicate the service and repair of vehicles.

Table 4: Technological changes by sector

Whilst technological advances are a driving force behind significant changes in the automotive industry, these innovations present exciting opportunities for new businesses and roles in the industry. For example, as most of the technologies are new and are thereby unfamiliar to participants in the industry, independent operators have the opportunity to invest in equipment and training so as to effectively compete with larger dealerships. Similarly, automotive industry workers have the opportunity to re-skill and up-skill to cater for technological

advances. This creates workers that have a broader skill base and, given the universal nature of technological innovation, will allow industry workers to transition out of the industry with transferable and employable skills.

What does this mean for the automotive workforce?

Job demand	• New occupations – For example, autonomous vehicles are becoming an increasingly common reality in the heavy vehicle space. Typically, autonomous vehicles are not built from scratch, rather, pre-existing vehicles are retrofitted to be autonomous. This conversion requires workers with the skills necessary to undertake these tasks and is an emerging occupation within the industry.
	• Increased demand for service and repair technicians that have the skills to work with new vehicles and tools.
	• Increased jobs to cater for battery electric and hybrid vehicles and components in the growing automotive electrical sector.
	• Demand for master technicians that can engage with and diagnose technologically advanced vehicles.
	• Demand for dual mechanical/electrical technicians stemming from recent integration and cross-over of mechanical and electrical requirements/components in vehicles.
Skills needs	• Digital literacy for all learners and workers in the industry will be critical. This need stems from the growing use of computers and machines.
	• Electrical skills will be needed due to growth in battery electric and hybrid vehicle components.
	 Strong technical skills to enable workers to understand and embrace new technologies and ways of working in a changing environment.
	• Mechanics will need to know how to service and repair vehicles of all fuel types – this will require a transition from mechanic to technician.
	• Proficiency in health and safety requirements for new tools and technologies – for example, high voltages associated with electrical equipment.
	• The prevalence of technology throughout the industry will require older workforce participants to reskill to be able to continue to participate in the workforce.

Structural change to the automotive industry

The changing landscape of the Australian economy is putting pressure on businesses in the automotive industry. These business pressures are resulting in changes to the structure of the industry as businesses seek to remain competitive and meet consumer needs.

Key business pressures that are driving structural change in the industry include:

- **Increased import penetration** following the exit of locally manufactured passenger vehicles, imports will play a central role in the Australian market. Moreover, whilst bus, truck and trailer manufacturing is set to continue in Australia, the import of fully built buses continues. Given the low cost of imported vehicles and confined Australian market, this effects the sector. Foreign markets and imports present an issue for other sectors within the industry that purchase parts manufactured overseas. With the fall of the Australian dollar, purchasing internationally manufactured parts puts cost pressures on the business, which must absorb the cost difference to retain competitiveness.
- **Increased business costs** the costs of operating in the automotive industry can be high. This issue is likely exacerbated by rapid technological change which forces businesses to invest in new equipment and facilities in order to maintain offerings. Businesses that do not have sufficient capital to make such an investment cannot engage in industry activities to the same capacity and typically undertake minor damage work. It is becoming more difficult for small businesses in particular to stay relevant with changing technology and new service requirements.
- **Varying industry demand** there are interdependencies between industries in the Australian economy. This is reflected in the automotive industry, which saw growth in the need for bus, truck and trailer services

stemming from the advances in the mining, agricultural, construction and retail industries. Given the uncertain future of the mining industry in Australia, there is the potential for flow on effects to be felt by the automotive industry. This may, however, be offset by continued growth in road freight and expenditure on public infrastructure.

What does this mean for the automotive workforce?

Job demand	• Increased demand for technicians that can undertake various roles. For example, technicians with skills in automotive tyre fitting and wheel alignment.
Skills needs	 Strong foundation skills that facilitate worker and learner adaptability and flexibility to change sectors within the industry. The decline in passenger vehicle manufacturing employment will require workers to leave that field and attain employment in other areas of the automotive industry or in alternative industries. Industry-wide skills to support labour mobility.
	 Management capabilities to complement the operation of businesses with varied structures.

Consumer preferences

As the options grow in the automotive market, and for alternative modes of transport, consumers have greater choice and influence over how they spend their money in the sector. The use of consumer data to understand these trends and forecast their impacts on the automotive industry is becoming increasingly important.

Consumer trends influencing the automotive industry include:

- Environmental considerations Australian society is becoming more environmentally conscious and this is impacting consumer engagement with the automotive industry. Consumers have the option to choose automotive vehicles and products that employ fuel alternatives, such as battery electric and hybrid cars. Additionally, bicycles present consumers with an automotive product that significantly reduces environmental impact.
- **Ageing population** The number of Australians over the age of 65 is projected to increase to 25 percent of the population (approximately nine million people) by 2056.⁶ This ageing population has the capacity to drive strong growth for certain components of the automotive industry, notably, the marine and motorcycle sectors. Known for their status as common retirement locations, areas of Queensland have seen increases in businesses in marine sector of the automotive industry in recent years.
- **Discretionary income** Increases in real household discretionary income provide consumers with greater purchasing power to further engage with the industry through expenditure on new vehicles, non-essential items, services, upgrades, new parts and accessories for automotive products.
- Educated consumers Consumers are becoming more informed and subsequently more price-conscious about automotive products and the processes used to repair vehicles. This stems from an information age where everything is available online. Workers in the industry in customer facing roles will have to engage with informed customers necessitating greater communication and relationship management skills.
- **Consumer convenience** Many consumers are time poor and prefer easy to access outlets, such as online shopping or information portals this trend can be seen in the changing locations and layout of retail stores, for example, storefronts which can be found near foot traffic. Convenience will also impact the service and repair industry with the increasing popularity of mobile service technicians (technicians that will bring their equipment and expertise to you). In metropolitan areas, the use of car-sharing services is increasing as younger consumers are less likely to own their own cars this will have a negative effect on the sales market but will create opportunities for the service and repair industry as these cars will be highly utilised and will have greater servicing and repair needs.

⁶ Commonwealth Department of Treasury (2016), *Intergenerational report – Australia in 2056*

Job demand	• Increased demand for customer centric roles, remote customer assistance with technologies, and managerial roles.
Skills needs	Customer service skills to support customers and consumer preferences for automotive products.
	• Analytical skills and the ability to understand, clean and utilise data to give companies an understanding of their customers and provide them with a competitive edge to produce better, customised consumer products.

What does this mean for the automotive workforce?

Regulatory and policy environment

The automotive industry operates in an environment of government and corporate policy and regulation. This policy and regulatory environment reflects a number of factors, including the competitive nature of the industry, the health and safety parameters required, environmental developments and federal and state law. This landscape can create difficulties for industry participants and businesses by making operations expensive and complicating requirements for industry engagement. Participants in the industry must continue to work within the confines of this landscape and adapt to new requirements.

Key policies and regulations that affect the industry include:

Federal and state regulation

Sectors across the industry have traditionally faced high levels of regulation. Depending on the activities undertaken within the sector, the degree of regulation varies. Further, with the emergence of new technology, environmental standards, and health and safety requirements, there are additional regulations that businesses in the industry must comply with. Such compliance requirements can place cost pressures on businesses. This is seen in the vehicle body repair sector whereby capital investment is required to meet health and safety measures, such as fireproof storage facilities. At present, states have varying licensing requirements within the automotive industry, this has resulted in various industries developing their own standards of ethics and accreditation, monitored by an industry body, for example the Boating Industry Association within the marine sector.

Advances in technology may result in further legislation, for example, the highly technical nature of autonomous vehicles may result in increased licensing requirements to ensure appropriately skilled technicians are operating on these vehicles. The increasingly high voltages that are used in hybrid and electric vehicles has been raising questions around the potential need for a license to operate on these vehicles.

Assistance

Assistance for the automotive industry has typically been high and can come in a range of formats. A significant industry assistance package is the Automotive Transformation Scheme which was launched by the Australian Government to encourage competitive investment, innovation and economic sustainability in the Australian automotive industry'.⁷ The legislated entitlement scheme was established under the *Automotive Transformation Scheme Act 2009* and will run from 2011-2020 and includes capped assistance of \$2.5 billion and further uncapped assistance of \$337 million.⁸

Climate change and emissions laws

With recent government, social and economic focus on environmental issues, the automotive industry is increasingly engaging with vehicles, products and tools that are more environmentally friendly due to tighter emissions controls. For example, the phasing out of two stroke power equipment and new rules for boats sold in Australia after July 2016 that must comply with enhanced fuel system requirements. These regulations also affect the materials used within the automotive industry such as paint and the phasing out of particular solvents as well as air conditioning and banning the use of particular gases.

⁷ Australian Government (2016), *Factsheet: Automotive Transformation Scheme (ATS)*

⁸ Australian Government (2016), Automotive Transformation Scheme: Customer Guideline 1 – Introduction, p 5

Many countries have introduced assistance programmes to encourage the use of low emission vehicles. As this market continues to grow, tax offsets and other incentives may be introduced to encourage the use of these vehicles resulting in changes to the Australian fleet and the skills required to service and repair these vehicles.

International agreements and regulations

Events within the international arena can have flow on effects to the Australian automotive industry. For example, Europe currently has more stringent emissions laws when compared to Australia which impacts their manufacturing of vehicles. If these vehicles are imported into Australia, it will have a knock-on effect on the Australian market. Legislation can also affect the volume of automotive imports, for example, the width of trailers in Australia is legislated to be smaller than trailers internationally. This means that most trailers have to be manufactured in Australia or modified once imported. If this changes and trailers in Australia can be wider, the need for trailer manufacturing in Australia will decrease.

Consumer protection laws

Consumer protection laws have been built in to the motor vehicle and repairers act under Australian Consumer Law (ACL). When completing a repair or selling a product, the salesperson or repairer must ensure work is completed to an 'acceptable quality' dependant on the price paid. If a part is sold to a consumer that does not meet Original Equipment Manufacturer specifications, the repairer is obliged to disclose this information to the consumer as well as an explanation as to why the part will suffice. If the consumer faces any issues with replacement parts, the repairer is obliged to bear the cost of future repairs.

What does this mean for the automotive workforce?

Job demand	 Demand for master technicians to diagnose and repair equipment that is increasingly complex, stemming from emission controls and increased battery usage. Increased demand for professionals that specialise in compliance and risk management.
Skills needs	• Understanding of regulations and up to date knowledge regarding regulatory changes.
	• Skills to service and repair new technology that stems from emissions laws – for example, electrical skills.
	Capacity to explain legislation and consumer options to customers.

Creating a future fit workforce

Using feedback from stakeholders and the data available, we have identified three priority skills for the AUR and AUM Training Packages. This list is an early assessment of the more immediate priority areas for development following an assessment of key trends and the state of the AUR and AUM Training Package. We recognise that these skills are cultivated to varying extents in the sector (through native and imported UoCs), but feedback received suggests they are of ongoing critical importance.

Table 5: Priority skills in the automotive industry

Skill	Definition	Rationale
Foundation skills	Essential Literacy, Language and Numeracy skills to operate effectively in the workplace, regardless of industry.	 Foundation skills, such as language, literacy, writing, numeracy and employability were listed as necessary skills for nearly all sectors in the industry. These skills assist new participants in the industry to improve and existing participants to adapt to the changing industry environment. <i>Language and communication</i> – in order to be able to communicate effectively with increasingly informed consumers. <i>Literacy</i> – to read manufacturers specifications and complete repairs according to OEM requirements. <i>Writing</i> – to record procedures and provide evidence of following protocols. <i>Numeracy</i> – to utilise diagnostic scanning tools, data interpretation and to understand safe working practices
Diagnostic skills	The ability to follow a predefined process and accurately record results in order to identify a fault and the most appropriate actions.	 All Certificate III level practitioners and above are expected to have the diagnostic skills to find a fault and carry out the appropriate repair methodology. All technicians are required to know how to use a diagnostic scanning tool and use a logical thought process as well data interpretation to diagnose the cause of the fault code. Diagnosis and fault-finding requires an understanding of the various systems within the vehicle, not just the component that creates the fault code. Workers who do not have the prerequisite foundation skills will not be able to complete diagnostic activities.
Digital Literacy and Technical skills	The ability to use digital technologies and the up-to date specific skills required to undertake a specialist technical occupation.	 All sectors excluding manufacturing require digital literacy with increased automation of functionality and vehicle capability affecting numerous sectors within the industry. The equipment and machinery used across the industry is becoming increasingly specialist and workers will need technical skills in order to operate effectively. Vehicles themselves are becoming more technologically advanced and workers are likely to become specialists in particular areas. Job specialisation towards vehicle brands and technology necessitates enhanced depth of skills. For example, using advanced diagnostic equipment. Technical skills that are applicable across the industry are of growing importance to the sector with a number of vehicle body repair workers seeking inter-sector/industry transitions. The way the industry engages with its customers is increasingly digitalised. This requires all workers, including sales and administration staff to be digitally proficient.

In addition to skill priorities identified in this section, it is required that a supplied list of 12 generic workforce skills are ranked in order of importance to relevant employers, these skills have been ranked below in Table 5.

All skills listed in Table 5 are important. Low ranking does not imply that the skill is not important, but rather lower ranking only indicates that these skills are not critical priorities for employers in the automotive industry. Note that these skills are in line with definitions provided to us by the Department.

Table 6: Importance of generic workforce skills

Generic Workforce Skill	Strategic IRC	Light Vehicle IRC	Heavy Vehicle IRC	Vehicle Body Repair IRC	Allied IRC
Communication/Collaboration including virtual collaboration/Social intelligence	2	4	8	2	3
Design mindset/Thinking critically/System thinking/Solving problems	6	3	3	1	4
Entrepreneurial	12	12	12	12	11
Learning agility/Information literacy/Intellectual autonomy and self- management	3	5	4	5	5
Technology use and application	1	1	5	4	2
Customer service/Marketing	11	6	7	8	6
Managerial/Leadership	5	10	10	11	10
Financial	10	9	11	9	9
Data analysis	4	8	6	7	8
Language, literacy and numeracy (LLN)	7	2	1	3	1
Environmental and sustainability	9	11	9	10	12
Science, technology, engineering and maths (STEM)	8	7	2	6	7

3 Key Drivers for Change and Proposed Responses

Section 3 and 4 effectively serve as the cases for change for projects scheduled in 2018-2019:

- Section 3 outlines the key drivers for change and how they will be reflected in 2018-19 training product development work.
- Section 4 outlines the status of 2016-17 projects and the proposed schedule of work through to 2019-20. It also contains the 2018-19 project details including rationales behind projects, Ministers' priorities addressed, consultation plans and the scope of the projects.
- Please refer to Appendix B for a summary of the training product changes being proposed in 2018 2019.

3.1 New technology is creating more advanced automotive materials and equipment

New technology is being introduced into the automotive industry; affecting how vehicles operate and the way they are maintained. Trainers have outlined the difficulties of accurately assessing performance criteria on equipment that is outdated and difficult to obtain. These issues were highlighted across both Automotive Training Packages. Examples of outdated technologies including magnetos, alternators and Kettering ignition systems upon which students were expected to demonstrate their competency or knowledge were found across multiple units of competency, thereby necessitating learners to demonstrate their competency and knowledge of them. Similarly, in the Vehicle Body Repairs sector, new paints and drying equipment are being used to refinish and repair cars of which little reference is made in the relevant Training Package. As such, industry has indicated that the equipment outlined in particular units will require updating. However, it is critical to note that these changes will not make all training content on older materials redundant. The average age of the Australian automotive fleet is ten years, therefore, it will be important to ensure units of competency accurately reflect the vehicles and materials a learner will encounter in the workplace.

Hybrid/electric vehicles are increasing in popularity. Industry believed it will be important to incorporate units on electric cars into the elective banks of Light Vehicle qualifications. Modern electric vehicles can have up to 600 volts flowing through the wiring looms – it will be imperative to incorporate the safety implications of working with electric cars into any updated units. Many corporations are or will soon be introducing electric car fleets on to the roads and all manufacturers are developing electric cars, so there is demand for an upgrade of the existing hybrid and electric vehicle skill set in order to upskill existing Light Vehicle Mechanics and Auto-electricians should the need arise.

New technologies will have new safety requirements that need to be taken into consideration.

Stakeholders highlighted the importance of updating the relevant safety information that is commensurate with new technologies. The batteries and voltages that learners are being exposed to on newer passenger vehicles pose a greater risk than batteries did in the past. For example, newer cars can have more than one battery with forty-eight volts and which uses Lithium ions. These new batteries will have different safety requirements and all stakeholders deemed it necessary to ensure the safety requirements of working with high voltages and amperages are articulated in Training Packages. The skills and knowledge to service and repair supplemental restraint systems (SRS) were also identified as a gap in Certificate III qualifications, a new unit with this information will therefore be developed.

Proposed Response

In order to ensure that the automotive workforce meets the future needs of the industry, training must focus on the skills that are required for learners and workers to engage with new and emerging technology. This will include reviewing all existing in-scope units in order to remove of out-of-date technologies from the performance evidence and performance criteria. The units will also need to be updated to include information

on the latest technologies such as electric cars and how to work safely with them. Units across motorcycle qualifications will need to be made more specific.

How will this driver be reflected in training product development work?

Table 7 provides a summary of how the driver will be reflected in current training product development work. For detailed training product changes proposed as part of 2018-19 work, please refer to Section 4 and Appendix B.

Table 7: How the new materials and equipment driver will be reflected in training product development work

and the Anti-Anti-Antony sting Definishing Tashards movill be
d to reflect the latest drying equipment, methodologies and paints that are idely across the industry. ng the materials used in this qualification will also require an update to the eeded to operate in this environment and the safety aspects associated with g with ultraviolet and infrared machinery.
e specific units within advanced qualifications will be identified in order to an 'Advanced Marine Technologies' skill set. Innical skills required will be updated to reflect the increased terisation of the marine industry.
inits within the Certificate III in Motorcycle Mechanical Technology will be I – there are key differences between motorcycles and light vehicles that are urately reflected in units that have been imported from light vehicle cations. This has resulted in difficulties for motorcycle learners and they are to complete these units, or are completing them on light vehicles. This they are entering the industry without key skills or exposure to certain cycle parts. Industry has outlined the need for motorcycle specific units. cycle specific units within advanced qualifications will be used to create an ced Motorcycle Technologies' skill set. g Light Vehicle units on diesel systems will be added to the elective bank.
within the Certificate III in Light Vehicle Mechanical Technology and the cate III in Automotive Electrical Technology will require updating to ensure lusion of out-of-date materials and the inclusion of equipment that s are likely to face in the workplace. onal information/unit on the safety implications of working with high s and amperages to be included in relevant units. on of information on regenerative braking and charging systems within TB001 'Diagnose and Repair Electric Braking Systems'. sion of existing hybrid/electric vehicles skill sets. unit on SRS to be included within Certificate III qualifications and a skill the service and repair of light vehicle safety systems.

3.2 Technology is creating vehicles and systems that are interconnected and interdependent

Automotive Electricians and Light Vehicle Mechanics do not have the technical skills to operate on interconnected and interdependent systems that are becoming commonplace in the Light Vehicles market. Industry representatives have indicated that there is a shortage of technicians with the skills to work on these technologically advanced vehicles. This driver will have the most significant impact on Automotive Electricians who will be expected to work on more and more complicated computer based systems, and Light Vehicle Mechanics who will need a greater understanding of the electrical nature of cars in order to be able to carry out repairs. For example, Light Vehicle Mechanics must work with advanced electronic systems that control the engine and its ancillary components. In addition, many modern tools are heavily computerised and require technical expertise. Automotive Electricians will need the skills to repair and replace electrical components such as sensors and Bluetooth technology that are in-built into the vehicle. For this reason, Light Vehicle Mechanics and Electricians must be able to work with advanced computer systems while also remaining informed about the current state of the art in the industry.

Motorcycle Mechanics are not currently being equipped with the necessary electronic skills to

operate effectively. Unlike the Light Vehicle market, Motorcycle Technicians are expected to address both mechanical and electrical issues – there is no separation of roles. As more and more technology from the Light Vehicles market filters into motorcycles such as vehicles that can communicate with each other, these electrical skills will become more and more prevalent.

The interconnected nature of vehicles is also having a significant impact on the Vehicle Body Repairs market. Vehicle Body Repair Technicians need an understanding of how to disconnect and reestablish electrical systems prior to making repairs. Automotive refinishing technicians will require specialist equipment to overcome the issues that arise from painting over sensors. New technologies are being encapsulated into windscreens and the glass in cars – automotive glazing technicians will need basic electrical skills to replace these windscreens and will need the digital literacy to carry out simple recalibration activities in the future.

Proposed Response

The AUR Training Package require updating to ensure learners have an increased awareness of the electrical and computerised nature of cars. All in scope Certificate III qualifications within the AUR Training Package will be updated to ensure sufficient awareness of these new technologies and how to work with them safely, for example, Vehicle Body Repair Technicians and Light Vehicle Mechanics need to know how to disconnect and re-establish electrical systems. Workers in these industries will require enhanced electrical and digital literacy skills. The role of the automotive electrician is most likely to be impacted by these new technologies, this qualification will require updating to ensure inclusion of training on the computerised nature of vehicles and the equipment used to fix them.

How will this driver be reflected in training product development work?

Table 8 provides a summary of how the driver will be reflected in current training product development work. For detailed training product changes proposed as part of 2018-19 work, please refer to Section 4 and Appendix B.

Table 8: How the interconnected vehicles driver will be reflected in training product development work

Project 1s Vehicle body repair qualifications 1	 11 units within Certificate III in Automotive Glazing Technology will be updated to include knowledge of basic electrical systems and calibration activities. 13 units within Certificate III in Automotive Refinishing will be updated to include information on sensors and new technologies that will be affected by re-finishing activity. Updating the materials used in this qualification will also require digital literacy and an understanding of the safety aspects associated with working with electrical technologies within cars.
Project 1t Marine training	• Units will be identified for inclusion within a specialist elective group in the Certificate II in Automotive Servicing to provide an introduction to the occupation.
Project 1u Motorcycle training	 Certificate III in Motorcycle Mechanical Technology will be updated to include information on electrical braking systems.

Project 1v Light vehicle qualifications 1	 Certificate III in Light Vehicle Mechanical Technology will be updated to include knowledge of working with interconnected vehicles. Light Vehicle Mechanics will require increased electrical skills – AURETR032 'Diagnose and repair automotive electrical systems' will be included in the core bank of the Certificate III in Light Vehicle Mechanical Technology. Advanced electrical and light vehicle mechanical units will be identified for the
	• Advanced electrical and light vehicle mechanical units will be identified for the development of advanced skill sets.

3.3 All vehicles must be repaired in accordance with OEM requirements

Access to technical information held by car manufacturers is becoming increasingly important as repairing and servicing new cars relies on access to electronic information and data produced by car manufacturers. Throughout the consultation process, industry have outlined the importance of completing repairs in accordance with manufacturers' specifications. Modern vehicles and the attached legislation necessitates that all learners understand the importance of using diagnostic and repair equipment and methodologies that meet Original Equipment Manufacturer (OEM) requirements. Within the Vehicle Body Repairs industry there were mixed messages on the ease at which this information can be accessed, of those car manufacturers that do share technical information, some restrict independent repairers' access to environmental, safety or security-related technical information due to perceived risks of increased car thefts or unauthorised modifications. In December 2017 the Australian Competition and Consumer Commission released a report recommending "regulatory intervention to mandate the sharing of technical information with independent repairers on 'commercially fair and reasonable terms', subject to appropriate safeguards to enable the sharing of environmental, safety and security-related technical information". Better information access and sharing creates an opportunity for wealth distribution and growth across the sector more broadly. It is unclear if there will be regulatory intervention to resolve this issue in the issue in the future, however there was consensus that all learners needed the skills to find, read and interpret OEM requirements. It was emphasised that good practice needs to be embedded in learners at the start of their training.

Given the safety-critical nature of newer technologies and consumer preferences for strict adherence to OEM service processes, the automotive after-sales market is set to become increasingly specialised. It is unlikely that independent repair shops and mechanics will be able to afford all the specialised equipment that may be required to service and repair particular vehicles. In addition to this, they are unlikely to have all the necessary expertise for every vehicle in-house. Given these changes, the industry have requested an update of core units within the apprenticeship level qualifications in order to ensure the identified core units provide the appropriate baseline skills a worker will require, with scope to specialise using the elective units and in-house training.

Proposed Response

AURVTN035 – Apply original equipment manufacturer repair procedures during vehicle repairs will be expanded to ensure inclusion of all necessary procedures for embedding good practice and ensuring repairs are carried out to OEM requirements. This unit will require students to demonstrate that they know how to access manufacturer specific information through online or other forms of research, how to read and interpret the information and common post-repair testing procedures. This unit will be made core across all Vehicle Body Repair qualifications. An update of 'Diagnose and Repair' units across the AUR Training Package will be undertaken to address industry concerns that these units are not being delivered consistently. Advanced diagnostic units will be identified for the development of an advanced mechanical diagnosis skill set.

How will this driver be reflected in training product development work?

Table 9 provides a summary of how the driver will be reflected in current training product development work. For detailed training product changes proposed as part of 2018-19 work, please refer to Section 4 and Appendix B.

Table 9: How the OEM requirements driver will be reflected in training product development work

Project 1s Vehicle body repair qualifications 1	• Updating unit AURVTN035 – <i>Apply original equipment manufacturer repair procedures during vehicle repairs</i> and incorporating it into the core bank of the Certificate III in Automotive Glazing Technology and the Certificate III in Automotive Refinishing Technology.	
	• Updating the materials used in this qualification will also require digital literacy and literacy skills to read and use manuals. Units from other training packages such as Business Services (BSB) or Foundation Skills (FSK) will be considered for addition to the elective bank in order to meet these needs.	

Project 1t Marine training	 Update 9 marine-specific 'diagnose and repair' units to ensure consistent delivery and learners are developing the underlying skills required to complete a diagnosis including – digital literacy, literacy, numeracy, data interpretation and logical thinking. Updating the materials used in this qualification will also require digital literacy and literacy skills to read and use manuals. Units from other training packages such as Business Services (BSB) or Foundation Skills (FSK) will be considered for addition to the elective bank in order to meet these needs.
Project 1u Motorcycle training	 Update 10 motorcycle specific 'diagnose and repair' units to ensure consistent delivery and learners are developing the underlying skills required to complete a diagnosis including – digital literacy, literacy, numeracy, data interpretation and logical thinking. Updating the materials used in this qualification will also require digital literacy and literacy skills to read and use manuals. Units from other training packages such as Business Services (BSB) or Foundation Skills (FSK) will be considered for addition to the elective bank in order to meet these needs.
Project 1v Light vehicle qualifications 1	 Update 8 light vehicle specific 'diagnose and repair' units and 16 'diagnose and repair' units that are used across multiple sub-sectors to ensure consistent delivery and learners are developing the underlying skills required to complete a diagnosis including – digital literacy, literacy, numeracy, data interpretation and logical thinking. Include of AURAFA005 <i>Write routine texts in an automotive workplace</i> into the elective bank of the Certificate III in Light Vehicle Mechanical Technology and Certificate III in Automotive Electrical Technology to ensure learners have the required technical writing skills. Updating the materials used in this qualification will also require digital literacy and literacy skills to read and use manuals. Units from other training packages such as Business Services (BSB) or Foundation Skills (FSK) will be considered for addition to the elective bank in order to meet these needs.

3.4 The relevance of specific automotive manufacturing training has changed given the changes in the Australian manufacturing landscape

The relevance of a number of the automotive manufacturing qualifications has been called into question – specifically the preparatory and advanced qualifications. Australia still has a thriving bus, truck and trailer manufacturing industry and the relevance of the qualifications associated with these occupations has not been disputed. However, within the bus, truck and trailer manufacturing industry there is little demand for advanced qualifications. These courses were once funded and associated with increased responsibility in the workplace, however this is no longer the case. There is no economic incentive to complete these qualifications and the skills that are developed do not appear to hold high value in the bus, truck and trailer manufacturing industry. Many of the skills that are developed in the advanced manufacturing qualifications are replicated within the Business Services Training Package and workers who wish to expand their understanding of business processes and running a workplace appear to prefer this Training Package.

Proposed Response

Further consultation will be required to fully assess the impacts of removing the Certificate I, IV and Diploma in Automotive Manufacturing. Manufacturing specific qualifications in the Certificate IV and Diploma in Automotive Manufacturing will be reviewed with the intention to delete if the skills and knowledge the unit is developing are no longer relevant or if they are found to duplicate existing AUR units

How will this driver be reflected in training product development work?

Table 10 provides a summary of how the driver will be reflected in current training product development work. For detailed training product changes proposed as part of 2018-19 work, please refer to Section 4 and Appendix B.

Table 10: How the changing manufacturing landscape driver will be reflected in training product development work

Project 1x	• Review with the intention to delete 22 units from the AUM Training Package.
Automotive	Removal of Certificate I, Certificate IV and Diploma in Automotive
qualifications	Manufacturing.

3.5 Changing consumer preferences and increased awareness

Consumers believe they have an increased awareness of how their vehicle should be repaired due to the ease of access to information and prices online. Many consumers are also purchasing spare parts on EBay and expect technicians to fit these parts onto their vehicles. Technicians need the appropriate skills to explain the repair process to the customer in order to secure their business for a reasonable price. On the other end of the spectrum, many vehicle body repair technicians will have no interaction with the customer as all their work will have come through an insurance company or an online process. In these workshops, efficiency and productivity are key in order to create higher margins – verbal communication is limited. Some technicians will require greater communication skills than others – this will need to be reflected in the elective bank.

Changing consumer preferences are also impacting the materials and equipment being used across the industry. For example, the increasing trend for matte over metallic or pearl paints on cars will require an update to the materials used in the Certificate III in Automotive Refinishing. The rise of marine craft sales is driving the need for more marine technicians with the skills to work on these vehicles. As consumers become more environmentally conscious, they are turning to hybrid and electric vehicles resulting in the need for a skill set in this area in order to train new joiners and upskill existing workers.

Proposed Response

Communication and sales units will be incorporated into the elective bank of theCertificate III in Automotive Refinishing Technology. Automotive Refinishing Technology and Marine Mechanical Technology qualifications will be updated to reflect current consumer trends. The existingskill sets for hybrid and electric vehicles will be updated with a prerequisite of a Certificate III qualification.

How will this driver be reflected in training product development work?

Table 11 provides a summary of how the driver will be reflected in current training product development work. For detailed training product changes proposed as part of 2018-19 work, please refer to Section 4 and Appendix B.

Table 11: How the OEM requirements driver will be reflected in training product development work

Project 1s Vehicle body repair qualifications	 Updating of Certificate III in Automotive Refinishing Technology to include communication and sales skills in the elective bank. Units from other training packages such as Business Services (BSB) will be considered for addition to the elective bank in order to meet these needs. Updating of paint and colour matching units within Certificate III in automotive refinishing to ensure inclusion of current industry trends such as matte paints. Updating the Certificate II in Automotive Body Repair Technology to enable a greater selection of elective units.
	• Learners who undertake the communications and sales unit will require enhanced communication and oral skills.
Project 1t Marine training	• Update units to ensure sufficient inclusion of jet-ski and small pleasure boat specific units.
Project 1v Light vehicle qualifications 1	 Expansion of AURSS00037 – Hybrid Electric Vehicle Inspection and Servicing Skill Set. Learners are likely to require enhanced digital literacy and electrical skills.

Impact of proposed responses

Implication of proposed response for stakeholders

Table 12 provides a description of all expected impacts relative to stakeholders, given the proposed responses.

Table 12: Implication of proposed response for stakeholders

Stakeholder	Impact
Industry/Employers	 Industry will have workers with the required foundational skills to operate on newer vehicles, more time can be spent on specialisations and upskilling over basic training. Industry will have workers who have an understanding of how important it is to complete repairs to OEM requirements. Insurers will be reassured that workers who have completed the qualifications will complete repairs to the appropriate standards. Employers are not currently using the manufacturing qualifications so there are no foreseeable consequences from their removal.
Learners/workers	 Learners will have the opportunity to work on newer vehicles and interact with technology that is going to become more and more prevalent. Learners will have greater awareness of the OH&S requirements that will arise from working on newer vehicles creating a safer environment for all. Learners will be able to complete courses and gain skills on materials they will be using in the workplace instead of being forced to retain information that will be of little use in their roles. Good practice and the use of OEM guidelines will be embedded into learners and workers at the start of their careers. It will ensure consumer safety as well as protecting workers from potential litigation. Learners and workers will have the required skills to communicate effectively with customers who are more informed but may not have a complete understanding of the repair process. The manufacturing qualifications are not currently delivered by any training organisations, meaning no learners are able to complete these qualifications can complete Business Services qualifications which have wider recognition and complete automotive manufacturing specific units if required.
Registered Training Organisations	 RTOs can base their training around clear assessment and performance criteria that are up to date and relevant to the sector. RTOs do not currently deliver the manufacturing qualifications but may be more open to delivering particular units.

Implication of proposed response for occupations in the industry

- All learners have the appropriate baseline skill set, employers will then be able to choose units from the elective bank or upskill their existing workers using skill sets to create the most appropriate specialisations. Working in the automotive industry will become increasingly specialised and it is likely that most workers will become specialists for a particular manufacturer or in a particular area.
- The advanced skill sets will allow learners to upskill and complete more technical roles.
- The updates to Certificate II level qualifications will allow learners who do not wish to complete the Certificate III an opportunity to work as an assistant within the marine or motorcycle industry.
- The role of an automotive electrician will become increasingly technical and they will require constant training in order to keep up to date with the latest technologies. Auto-electricians will be expected to have a greater understanding of computer systems and the relevant software.

- As demand for consumer convenience grows, there will be increased opportunities for mobile light vehicle mechanics.
- As customer service skills become more important depending on the business context, many technicians may end up spending more time in a customer facing role.
- As the demand for unique colours on vehicles grow, there is an increasing demand for colour matching specialists across the automotive refinishing industry.

Risk of not proceeding with proposed responses

The base case (the 'do nothing') option must be considered as an alternative to the proposed changes in order to enable effective comparison between the two scenarios. This option negates the need for investment in training products, however does not address the current state issues identified. The likely impacts of this option are outlined below

Table 13: Likely impacts if not addressed

Existing issue	Likely impact(s) if not addressed
Existing qualifications and training do not reflect equipment and materials workers will use in industry.	 It is likely that inaction will result in poor retail, service and repair work and a subsequent loss of business. Graduates are not able to meet industry requirements and require further "on the job" training at a cost to the employer. The increased safety and OH&S implications associated with this project may not be appropriately understood by industry participants, thereby leading to increased hazards and risks.
Learners are not developing the required technical skills to work on more technologically advanced vehicles.	 Individuals who are unable to become proficient in newer systems are unlikely to prosper in the automotive field, especially as computerised, interconnected systems become increasingly common. This will add to the significant skills shortage within the automotive industry and reduce productivity in the workplace. Individuals who are not sufficiently prepared to complete repairs to OEM requirements risk being excluded from the increasingly specialised automotive repairs industry. Workers risk litigation if they use non-compliant repairs methodology as well as risking consumer safety.
Learners are not developing diagnostic skills to the standard that is expected by industry.	• Graduates are unable to complete diagnostic activities, resulting in their exclusion from working with newer vehicles and addressing more difficult issues. This may result in learners and workers leaving the industry, exacerbating the existing skills and labour shortage.
Learners are unable to complete the Certificate I, IV and Diploma in Automotive Manufacturing	• Learners who want to complete particular units within these qualifications continue to be unable to do so as they are not delivered by any training organisations.

3.6 Sensitivities

A number of sensitivities were raised during consultation which will be important to consider throughout the development of the AUR Training Package.

Table 14: Sensitivities from consultation

Sensitivity	Likely impact(s)
Removal of qualifications	• Project 1t may result in the removal of Certificate II in Marine Mechanical Technology from the AUR Training Package and the creation of a specialist elective group with the Certificate II in Automotive Servicing Technology. This may lead to concerns that a pathway into the apprenticeship has been removed, which is not the case and will be clearly communicated in consultations. Industry consultation has identified the Certificate III as the baseline qualification and there is confusion over the purpose of Certificate II qualifications.
	• Project 1x proposes the removal of three manufacturing qualifications. This may result in inaccurate concerns that a pathway to professional development within the automotive manufacturing industry has been removed. These qualifications are not currently delivered and there has been no enrolments into any of the 22 units being reviewed for deletion. This project proposes the creation of an accessible professional development pathway for existing workers. If further consultation suggests no AUR units provide an adequate substitute and the units are being used but learners are not formally enrolling, the units will not be removed from the Training Package. If units are removed, significant notice will be provided.
Modification of packaging rules for revised qualifications	• Potential increases in the time taken to complete qualifications may deter students from undertaking the qualifications. Industry feedback has suggested more time is required to ensure learners are completing qualifications to the expected standard.
AURVTN035 Apply original equipment manufacturer repair procedures during vehicle repairs should be made core across all AUR Training Packages	• A number of industry stakeholders have suggested the revised unit AURVTN035 should be made core across all Certificate III qualifications within the AUR Training Package. Concerns have been raised that this would make qualifications extremely difficult to deliver in environments where manufacturer specifications are not available. The unit will be made core within Vehicle Body Repair qualifications that in scope in 2018/19 and elective across all other qualifications. Uptake of the unit will be assessed over the next two years, as well as changes in regulation to assess whether the unit should be made core across all Certificate III qualifications.
The use of skill sets instead of qualifications	• Many industry stakeholders highlighted that although skill sets are the preferred pathway for upskilling, they are not usually funded resulting in very low uptake. Learners prefer to enrol on to funded qualifications, complete the relevant units and then do not complete the qualification. This is one factor which has contributed to the low completions rates across the AUR Training Package. Skill sets will continue to be developed in the hope that state governments recognise their value and skills shortages can be addressed using skill sets instead of qualifications.

Key Drivers for Change and Proposed Responses

4 Proposed Schedule of Work

Section 3 and 4 effectively serve as the cases for change for projects scheduled in 2018-2019. Section 4 outlines:

- The status of 2016-17 projects and the proposed schedule of work through to 2019-20.
- The 2018-19 project details including rationales behind projects, Ministers' priorities addressed, consultation plans and the scope of the projects.
- A brief overview of projects to be undertaken beyond 2019-20.
- Please refer to Appendix B for a summary of the training product changes being proposed in 2018 2019.

Proposed Schedule of Work 2017-18 to 2019-20

Table 15 contains the activities endorsed by the IRC through to June 2020 in the previous Industry Skills Forecast. Previously endorsed projects have been reviewed to ensure alignment with AISC and COAG Industry and Skills Ministers' priorities, following advice from the Department. Specifically, the Department asks that the review of UoCs is aligned to the qualifications that form part of the VET Student Loans Program, review of qualifications with low or no enrolments, reduction of duplication across the system, creation of cross-industry UoCs and great recognition of skill sets.

Table 15 presents the Automotive Industries Proposed Schedule of Work through to June 2020. Because projects have been defined on a UoC basis, only indicative qualifications have been included to show where a project has a focus aligned with a qualification. This does not mean that all the UoCs from that qualification are included in the project, nor that they are the only qualifications that contain the included units.

Table 15: Automotive Industries Proposed Schedule of Work

Year	Project Type	Status	Project Code	Project Name	Responsible IRC	Number of UoCs
2016-17	TPD Projects	Case for Endorsement in development	1a	Certificate III in Automotive Manufacturing Technical Operations – Bus, Truck and Trailer	Heavy Vehicle	25
2016-17	TPD Projects	Case for Endorsement approved	10	Air conditioning qualification re- structure	Light Vehicle	-

Year	Project Type	Status	Project Code	Project Name	Responsible IRC	Number of UoCs
2016-17	TPD Projects	Case for Endorsement in development	2a	Tyre fitting and wheel alignment	Light Vehicle	26
2016-17	TPD Projects	Case for Endorsement in development	2b	Vehicle Repair Estimator	Vehicle Body Repair	1
2016-17	TPD Projects	Case for Endorsement in development	2d	Review of training for Off The Road tyres	Heavy Vehicle	5
2016-17	TPD Projects	Case for Endorsement in development	2e	Multi-combination braking system compatibility	Heavy Vehicle	2
2016-17	TPD Projects	Case for Endorsement in development	2g	New units for working with marine fuel systems	Allied	1
2016-17	TPD Projects	Case for Endorsement in development	2h	Marine transition skill set	Allied	-
2016-17	TPD Projects	Case for Endorsement in development	2i	Service and repair of personal mobility devices	Light Vehicle	-
Total UoCs	s in scope in year	1				59
2017-18	Case for Change Activities	IRC commissioned development of a case for change	1g	Vocational preparation	Strategic	38
2017-18	Case for Change Activities	IRC commissioned development of a case for change	1h	Servicing technology	Strategic	10
2017-18	Case for Change Activities	IRC commissioned development of a case for change	1i	Advanced qualifications	Strategic	29
2017-18	Case for Change Activities	IRC commissioned development of a case for change	1р	Light vehicle certificate IIs	Light Vehicle	9
2017-18	Case for Change Activities	IRC commissioned development of a case for change	1m	Mechanical heavy technology	Heavy Vehicle	77

Year	Project Type	Status	Project Code	Project Name	Responsible IRC	Number of UoCs
2017-18	Case for Change Activities	IRC commissioned development of a case for change	1n	Manufacturing production, bus, truck, trailer	Heavy Vehicle	17
2017-18	Case for Change Activities	IRC commissioned development of a case for change	1q	Cooling and air conditioning training materials	Light Vehicle	10
2017-18	Case for Change Activities	IRC commissioned development of a case for change	1r	Automotive management qualifications	Allied	10
Total UoCs	in scope in year 2					200
2018-19	Case for Change Activities	IRC commissioned development of a case for change	18	Vehicle body repair qualifications 1	Vehicle Body Repair	44
2018-19	Case for Change Activities	IRC commissioned development of a case for change	1X	Automotive manufacturing qualifications	Strategic	27
2018-19	Case for Change Activities	IRC commissioned development of a case for change	1t	Marine training	Allied	35
2018-19	Case for Change Activities	IRC commissioned development of a case for change	1u	Motorcycle training	Allied	23
2018-19	Case for Change Activities	IRC commissioned development of a case for change	1v	Light vehicle qualifications 1	Light Vehicle	71
Total UoCs	in scope in year 3	3				200
2019-20	Case for Change Activities	IRC to submit case for change in year 4	1W	Passenger vehicle manufacturing	Light Vehicle	29
2019-20	Case for Change Activities	IRC to submit case for change in year 4	1aa	Vehicle body repair qualifications 2	Vehicle Body Repair	77

Year	Project Type	Status	Project Code	Project Name	Responsible IRC	Number of UoCs
2019-20	Case for Change Activities	IRC to submit case for change in year 4	1ab	Light vehicle qualifications 2	Light Vehicle	60
2019-20	Case for Change Activities	IRC to submit case for change in year 4	1ad	Sales and administration qualifications	Allied	24
2019-20	Case for Change Activities	IRC to submit case for change in year 4	1af	Outdoor power equipment training	Allied	17
2019-20	Case for Change Activities	IRC to submit case for change in year 4	2m	Dual trade qualification assessment	Light Vehicle	-
2019-20	Case for Change Activities	IRC to submit case for change in year 4	1ag	Motor sport training	Light Vehicle	45
2019-20	Case for Change Activities	IRC to submit case for change in year 4	2t	Autonomous vehicles project	Light Vehicle	-
2019-20	Case for Change Activities	IRC to submit case for change in year 4	1ah	Bicycle training	Allied	29
Total UoCs	s in scope in year 4	l .				281
2020-2021			Update of trainin not amended for	ng products originally in scope for 2016- currency or relevance.	17 work that were	N/A
2021-2022			Review the need technologies and	to create new training products to cater related skills.	for emerging	N/A

2018-19 Project Details in the Proposed Schedule of Work

The Department has advised that the AISC will use the recommendations made by all IRCs, together with an analysis of the relevant Industry Skills Forecast and Proposed Schedule of Work reports, to develop a national schedule of all UoCs across Training Packages. Table 16 summarises how these projects relate to workforce and training demand to assist the AISC to form a national schedule that maximises that prioritises future workforce needs.

Table 16: Link 2018-19 Projects to workforce and training demand

	Occupations/skills impacted	Evidence of future workforce demand ⁹	Evidence of VET training demand	Project outcomes
See sections for more information:	Section 3 – Key Drivers for Change	Section 2 – Employment and Skills Outlook	Section 3 – <i>Key Drivers for</i> change ¹⁰	Section 3 – <i>Key Drivers for</i> change
Project 1s: Vehicle Body Repair Qualifications	 Anticipated to impact 6 occupations: Automotive Glazing Technician Automotive Vehicle Refinishing Technician Vehicle Dismantler Vehicle Detailer Vehicle Window Tinter Vehicle Trimming Assistant 	Moderate occupational growth is projected over the next five years with a 6% increase in employment of vehicle painters and stable growth in other occupations. ¹¹	 Moderate enrolments: 327 in Automotive Glazing Technology 1582 in Automotive Refinishing Technology 517 in Automotive Body Repair (Certificate II) Current gap in formal training - employers and industry report "on the job" training is often required to upskill workers in new technologies and assessment requirements do not currently address the standards expected by industry. 	Automotive Glazing and Refinishing Technicians will have the skills and knowledge they need to operate on more advanced vehicles and use more technical equipment .

¹¹ Department of Jobs and Small Business

⁹ Please note employment projections at an industry level are confined to specific industry definitions (as defined by Australian Bureau of Statistics under ANZSCO), and therefore may not reflect industry terminology.

	Occupations/skills	Evidence of future	Evidence of VET training	Project outcomes
	impacted	workforce demand ⁹	demand	
Project 1t:	Anticipated to impact 1	1.3 million people in Australia	Moderate enrolments as the	Marine Mechanical Technicians
Marine	occupation:	live in a home with a motor or	industry is niche (1.2 million	will have the diagnostic skills
qualifications	Marine Mechanical	speed boat, this is a 6.4%	new cars sold in 2017 vs 15 000	that are expected by industry of
	Technician	increase since 2012 and the	new boats registered) ¹³ :	Certificate III learners.
		trend is likely to continue. ¹²	• 328 enrolments in	
		Although employment levels for	Marine Mechanical	
		marine mechanical technicians	Technology	
		are not well measured, it is likely		
		that this increase in boat	Current gap in formal	
		ownership will increase the need	training - employers and	
		for trained personnel to service	industry report "on the job"	
		and repair these boats.	training is often required to	
			ensure workers have the	
			requisite diagnostic skills.	

¹² Roy Morgan Research Company (http://www.roymorgan.com/findings/7109-high-tide-boat-ownership-rising-in-australia-201701170931)

 $^{^{13}}$ Australian Boating Industry Association

	Occupations/skills impacted	Evidence of future workforce demand ⁹	Evidence of VET training demand	Project outcomes
Project 1u: Motorcycle qualifications	Anticipated to impact 1 occupation: • Motorcycle Technician	Australia's motorcycle and ATV/SSV market fell 9.3% in 2017 although total industry sales stayed above 100,000 for the full calendar year. ¹⁴ Consultation has outlined that current Motorcycle Technicians are completing training intended for Light Vehicle Technicians which is not fit for purpose. This has resulted in difficulties for motorcycle learners and they are entering the industry without key skills or exposure to certain motorcycle parts. The purpose of this project is to ensure Motorcycle Technicians are meeting industry needs,	 Moderate enrolments as the industry is niche (1.2 million new cars sold in 2017 vs 104 000 new motorcycles): 602 enrolments in Motorcycle Mechanical Technology Current gap in formal training - employers and industry report "on the job" training is often required to ensure workers have the requisite electrical skills. 	Motorcycle Technicians will have the skills and knowledge required to operate on all aspects of the motorcycle, given technicians are expected to have an understanding of both the electrical and mechanical components of the vehicle.

¹⁴ Federal Chamber of Automotive Industries

	Occupations/skills impacted	Evidence of future workforce demand ⁹	Evidence of VET training demand	Project outcomes
Project 1v: Light Vehicle qualifications 1	Anticipated to impact 2 occupations: • Light Vehicle Mechanical Repair Technician	Small (1.5%) projected increase in growth over the next 5 years for Light Vehicle Mechanical Repair Technicians.	 Extremely high enrolments: 15690 in Light Vehicle Mechanical Technology 	Light Vehicle Mechanics will have the diagnostic skills that are expected by industry of Certificate III learners.
	Technician • Automotive Electrician	Stable growth for Automotive Electricians. In 2016, employers in New South Wales, Victoria and South Australia found it hard to fill vacancies for Automotive Electricians.	• 2180 in Automotive Electrical Technology Current gap in formal training - employers and industry report "on the job" training is often required to upskill workers in new technologies as well as inconsistent outcomes among learners who have completed the same qualifications.	Both occupations will have the skills and knowledge required to operate safely on more advanced vehicles and use more technical equipment.
Project 1x: Automotive Manufacturing	 Anticipated to impact 2 occupations: Vehicle Body Builders Automotive Manufacturing Technician (Bus, Truck, Trailer) 	Since the decline of the passenger vehicle manufacturing industry in Australia, entry level and advanced qualifications have been less frequently used. The standard requirement for workers in the bus, truck and trailer manufacturing industry is a Certificate III.	Zero enrolments in all three in scope qualifications for the last 3 years.	Removal of qualifications that are not linked to an industry need.

5 2018-19 Project Details

2018-19 project details in the Proposed Schedule of Work

The Department has advised that the AISC will use the recommendations made by all IRCs, together with an analysis of the relevant Industry Skills Forecast and Proposed Schedule of Work reports, to develop a national schedule of all UoCs across Training Packages.

5.1 Project 1s – Vehicle Body Repair Qualifications (Vehicle Body Repairs IRC)

Table 16: Project 1s – Rationale and Scope

Project 1s – Veł	nicle Body Repair Qualifications
Description	 Update 24 units of competency for currency and inclusion of new equipment, technologies and materials. Update and expansion of AURVTN035 <i>Apply original equipment manufacturer repair procedures during vehicle repairs</i> to require students to demonstrate that they know how to access manufacturer specific information through online or other forms of research, how to read and interpret the information and common post-repair testing procedures. Update of Certificate III in Automotive Refinishing and Certificate III in Automotive Glazing to ensure appropriate content within core and elective banks, including a review of potential units from other training packages that could meet these needs Re-structure of Certificate II in Automotive Body Repair Technologies to ensure students are sufficiently prepared for automotive servicing roles in the workplace.
Rationale	 As outlined in Section 3 (pages 23-31), this project will address the following drivers: New technology is creating more advanced automotive materials and equipment Technology is creating vehicles and systems that are interconnected and interdependent All vehicles must be repaired in accordance with OEM requirements Changing consumer preferences and increased awareness
Scope of Project	We anticipate the Case for Endorsement to be provided to the AISC in late 2018 or early 2019 <i>Training Package to be developed/revised:</i> Automotive Retail, Service and Repair Training Package (AUR) <i>3 Qualifications to be revised:</i>

Project 1s – Vehicle Body Repair Qualifications

- Certificate II in Automotive Body Repair Technology
- Certificate III in Automotive Glazing Technology
- Certificate III in Automotive Refinishing Technology *Skill sets to be developed/revised:*
- N/A

24 existing Units of Competency (UoC) to be revised:

• Please refer to Appendix B for list of UoCs

Table 17: Project 1s – Ministers' Priorities

Reform	Evidence of reform being addressed
Removing obsolete and superfluous qualifications from the training system	Given the increasingly technical and specialised nature of the Vehicle Body Repair industry, it is not in the interest of the industry to remove these qualifications. Consequently, they are not superfluous.
Making more information available about industry's expectations of training delivery	Training Package components will be written so they align with industry expectations for training delivery, specifically around practical experience, and will be released with an AUR Companion Volume that provides additional information.
Ensuring the training system better supports individuals to move easily from one related occupation to another	The proposed enhancements to this package will focus on specific occupation requirements but will also be used to provide broader training to learners, specifically: negotiation, communication, digital literacy and future-planning.
Improving the efficiency of the training system by creating units that can be owned and used by multiple industry sectors and housing these units in a work and participation bank	Units on the importance of meeting OEM requirements, basic electrical knowledge and future-planning can be used across multiple qualifications. However, the technical nature of the automotive industry means these units cannot be used across multiple Training Packages.
Fostering greater recognition of skill sets	This project does not include the development of a new skill set, however, learners with a Certificate III qualification will have the opportunity to complete skill sets in Hybrid/Electric Vehicles or Vehicle Loss Assessing to upskill and expand their roles.

Consultation Plan

PwC's Skills for Australia intends to engage a wide range of stakeholders relevant to this sub sector of the automotive industries. Types of stakeholders to be consulted with include:

Table 18: Project 1s – Stakeholders to be consulted

Employers	Industry associations/Peak bodies	RTOs	Public/Government bodies
 PPG Industries AAPR Currans Accident Repair Glass Assist Carsmetics i-Car Valspar paints SSMI Group Axaltacs Car Craft IAG Wales Trucks Quantum Risk Management youi Allianz BASF Parkes Bodyworks Wales Trucks Toyota Capital Smart 	 Automotive Glazing Association Automotive Training Board of New South Wales Motor Traders Association (NSW, QLD, SA, WA, NT, ACT) Automobile Chamber of Commerce (VIC, TAS) Australian Motor Bodies Repairers Association Australian progressive Repairers Association Institute of Accident Assessors 	 Enterprise RTOs Private and Community RTOs Technical and Further Education institutions (TAFEs) 	 STAs Licensing bodies where applicable

5.2 Project 1t – Marine Mechanical Technology Qualifications (Allied IRC)

Table 19: Project 1t – Rationale and Scope

Project 1t – Ma	rine Mechanical Technology Qualifications
Description	 Removal of the Certificate II in Marine Mechanical Technology and identification of marine specific units for inclusion into the Certificate II in Automotive Servicing. Update of 9 'Diagnose and Repair' units to reflect industry concerns that these units are delivered inconsistently across the AUR Training Package Development of an Advanced Marine Technician skill set, in conjunction with project 1i, Automotive Advanced qualifications project in 2017-18.
Rationale	 As outlined in Section 3 (pages 23-31), this project will address the following drivers: New technology is creating more advanced automotive materials and equipment Changing consumer preferences and increased awareness
Scope of Project	 We anticipate the Case for Endorsement to be provided to the AISC in July 2019. <i>Training Package to be developed/revised:</i> Automotive Retail, Service and Repair Training Package (AUR) <i>Qualifications to be revised:</i> Certificate II in Marine Mechanical Technology Certificate III in Marine Mechanical Technology <i>Skill sets to be developed/revised:</i> Advanced Marine Technician Skill set <i>9 existing Units of Competency (UoC) to be revised:</i> Please refer to Appendix B for list of UoCs

Table 20: Project 1t – Ministers' Priorities

Reform	Evidence of reform being addressed
Removing obsolete and superfluous qualifications from the training system	There are very few users of the Certificate II in Marine Mechanical Technology. Learners who are interested in a pre-apprenticeship programme will be able to complete the Certificate II in Automotive Servicing and complete marine specific elective units. This qualification will therefore be removed pending further consultation.
Making more information available about industry's expectations of training delivery	Training Package components will be written so they align with industry expectations for training delivery, specifically around practical experience, and will be released with an AUR Companion Volume that provides additional information
Ensuring the training system better supports individuals to move easily from one related occupation to another	The proposed enhancements to this package will focus on specific occupation requirements but will also be used to provide broader training to learners, specifically – electrical skills and digital literacy.
Improving the efficiency of the training system by creating units that can be owned and used by multiple industry sectors and housing these units in a work and participation bank	The enhancements to this Training Package requires the development of marine specific units in order to meet industry needs. These units cannot be used across multiple qualifications.
Fostering greater recognition of skill sets	Marine specific units within existing advanced qualifications will be identified for inclusion in a marine specific skill set.

Consultation Plan

PwC's Skills for Australia intends to engage a wide range of stakeholders relevant to this sub sector of the automotive industries, the automotive marine repair industry is extremely small, this is reflective in the smaller stakeholder group to be consulted with. Types of stakeholders to be consulted with include:

Table 21: Project 1t – Stakeholders to be engaged

Employers	Industry associations/Peak bodies	RTOs	Public/Government bodies
 Kawasaki Francis Marine Hunts Marine Callaghan's Marine Service DMS Maritime 	 Boating Industry Association (NSW, VIC, WA, SA, NT) Marine Queensland Automotive Training Board of New South Wales Motor Traders Association (NSW, QLD, SA, WA, NT, ACT) Automobile Chamber of Commerce (VIC, TAS) 	 Enterprise RTOs Private and Community RTOs Technical and Further Education institutions (TAFEs) 	STAsLicensing bodies where applicable

5.3 Project 1u – Motorcycle Mechanical Technology Qualifications (Allied IRC)

Table 22: Project 1u – Rationale and Scope

Project 1u –Motorcycle Mechanical Technology Qualifications		
Description	• Update of 10 'Diagnose and Repair' units to reflect industry concerns that these units are delivered inconsistently across the AUR Training Package	
	Adaptation of 5 units that have been imported from Light Vehicle qualifications to become motorcycle specific.	
	• Development of an Advanced Motorcycle Technician skill set, in conjunction with project 1i, Automotive Advanced qualifications project in 2017-18.	
	• Addition of Certificate II level motorcycle units in the elective bank of the Certificate II in Automotive Servicing, in conjunction with project 1h, Certificate II in Automotive Servicing Project in 2017-18	
Rationale	As outlined in Section 3 (pages 23-31), this project will address the following drivers:	
	New technology is creating more advanced automotive materials and equipment	

Project 1u –Mo	Project 1u –Motorcycle Mechanical Technology Qualifications	
	Technology is creating vehicles and systems that are interconnected and interdependent	
Scope of	We anticipate the Case for Endorsement to be provided to the AISC in July 2019.	
Project	Training Package to be developed/revised:	
	Automotive Retail, Service and Repair Training Package (AUR)	
	1 Qualification to be revised:	
	Certificate III in Motorcycle Mechanical Technology	
	Skill sets to be developed/revised:	
	Advanced Motorcycle Technician skill set	
	10 existing Units of Competency (UoC) to be revised and 5 new UoCs to be developed:	
	Please refer to Appendix B for list of UoCs	

Table 23: Project 1u – Ministers' Priorities

Reform	Evidence of reform being addressed
Removing obsolete and superfluous qualifications from the training system	This qualification is the only motorcycle specific qualification in the AUR Training Package, it is not superfluous.
Making more information available about industry's expectations of training delivery	Training Package components will be written so they align with industry expectations for training delivery, specifically around practical experience, and will be released with an AUR Companion Volume that provides additional information
Ensuring the training system better supports individuals to move easily from one related occupation to another	The proposed enhancements to this package will focus on specific occupation requirements but will also be used to provide broader training to learners, specifically – electrical skills and digital literacy.
Improving the efficiency of the training system by creating units that can be owned and used by multiple industry sectors and housing these units in a work and participation bank	The enhancements to this Training Package requires the development of motorcycle specific units in order to meet industry needs. These units cannot be used across multiple skill sets.
Fostering greater recognition of skill sets	Motorcycle specific units within existing advanced qualifications will be identified for inclusion in a motorcycle specific skill set.

Consultation Plan

PwC's Skills for Australia intends to engage a wide range of stakeholders relevant to this sub sector of the automotive industries. The automotive motorcycle repair industry is extremely small and dominated by a few large players and smaller independent retailers. Our stakeholder list is reflective of the nature of the industry. Types of stakeholders to be consulted with include:

Table 24: Project 1u – Stakeholders to be engaged

Employers	Industry associations/Peak bodies	RTOs	Public/Government bodies
 Kawasaki Suzuki Honda Yamaha Bike Oz Independent motorcycle retailers and mechanics 	 Automotive Training Board of New South Wales Motor Traders Association (NSW, QLD, SA, WA, NT, ACT) Automobile Chamber of Commerce (VIC, TAS) 	 Enterprise RTOs Private and Community RTOs Technical and Further Education institutions (TAFEs) 	STAsLicensing bodies where applicable

5.4 Project 1v – Light Vehicle Qualifications Project (Light Vehicle IRC)

Table 25: Project 1v – Rationale and Scope

Project 1v – 1	Light Vehicle Qualifications 1
Description	• Update 5 units of competency for currency and inclusion of new technologies.
	• Update of 24 'Diagnose and Repair' units to reflect industry concerns that these units are delivered inconsistently across the AUR Training Package
	Update 2 units of competency for concerns around ambiguity within Performance or Knowledge Evidence.
	Update and expand existing hybrid/electric vehicles skill sets.
	• 1 new unit on safety restraint systems (SRS).
	• Development of an Advanced Light Vehicle Mechanical, Advanced Mechanical Diagnosis and Advanced Light Vehicle Electrical skill set, in conjunction with project 1i, Automotive Advanced qualifications project in 2017-18.
Rationale	As outlined in Section 3 (pages 23-31), this project will address the following drivers:
	New technology is creating more advanced automotive materials and equipment

Project 1v –	Light Vehicle Qualifications 1
	 Technology is creating vehicles and systems that are interconnected and interdependent All vehicles must be repaired in accordance with OEM requirements
	Changing consumer preferences and increased awareness
Scope of Project	We anticipate the Case for Endorsement to be provided to the AISC in July 2019. <i>Training Package to be developed/revised:</i>
	Automotive Retail, Service and Repair Training Package (AUR)
	 Certificate III in Light Vehicle Mechanical Technology Certificate III in Automotive Electrical Technology Skill sets to be developed/repised:
	 AURSS00037 – Hybrid Electric Vehicle Inspection and Servicing Skill Set AURSS00034 – Battery Electric Vehicle Diagnosis and Repair Skill Set
	AURSS00035 Battery Electric Vehicle Inspection and Servicing Skill Set
	Advanced Automotive Electrical Skill Set
	Advanced Light Vehicle Mechanical Skill Set
	• Auvalieu Mechanical Diagnosis Skill Set 31 existing Units of Competencii (UoC) to be revised and 1 new UoC to be developed
	Please refer to Appendix B for list of UoCs

Table 26: Project 1v – Ministers' Priorities

Reform	Evidence of reform being addressed
Removing obsolete and superfluous qualifications from the training system	These qualifications are the standard entry points into the light vehicle mechanic and automotive electrician trades. Consequently, they are not superfluous.
Making more information available about industry's expectations of training delivery	Training Package components will be written so they align with industry expectations for training delivery, specifically around practical experience, and will be released with an AUR Companion Volume that provides additional information
Ensuring the training system better supports individuals to move easily from one related occupation to another	The proposed enhancements to this package will focus on specific occupation requirements but will also be used to provide broader training to learners, specifically – electrical skills and digital literacy. The hybrid/electric vehicles skillset with facilitate the upskilling of existing workers.
Improving the efficiency of the training system by creating units that can be owned and used by multiple industry sectors and housing these units in a work and participation bank	The new units that will be developed for the hybrid/electric vehicles skill set can also be used by workers in the Vehicle Body Repairs Industry.
Fostering greater recognition of skill sets	There is high demand for hybrid/electric vehicles skill set across the automotive industry in order to future- proof the existing workforce.

Consultation Plan

PwC's Skills for Australia intends to engage a wide range of stakeholders relevant to this sub sector of the automotive industries. Types of stakeholders to be consulted with include:

Table 27: Project 1v – Stakeholders to be engaged

Employers	Industry associations/Peak bodies	RTOs	Public/Government bodies
 Hyundai Mazda Suzuki K-Mart Volkswagen Volvo TESLA 	 Automotive Training Board of New South Wales Motor Traders Association (NSW, QLD, SA, WA, NT, ACT) Automobile Chamber of Commerce (VIC, TAS) 	 Enterprise RTOs Private and Community RTOs Technical and Further Education institutions (TAFEs) 	STAsLicensing bodies where applicable

Employers	Industry associations/Peak bodies	RTOs	Public/Government bodies
Jax Group			
MAS Auto			
Titan Australia			
Downer Group			
• Bob Jane			
• AHG			
• RAC			
John Hughes Group			
• Independent franchise networks such as Automasters.			

5.5 Project 1x – Automotive Manufacturing Qualifications (Strategic IRC)

Table 28: Project 1x – Rationale and Scope

Project 1x –Automotive Manufacturing Qualifications		
Description	Review with the intention to delete 22 units of competency for currency and potential removal from the automotive manufacturing Training Package. Although it is clear the qualifications are not meeting industry needs, further consultation will be required to understand the impact of deleting 22 units and the implications this will have on the development of skills in the automotive industry.	
Rationale	As outlined in Section 3 (pages 23-31), this project will address the following drivers:	
	The changing manufacturing landscape has reduced the need for advanced manufacturing qualifications	
Scope of Project	 We anticipate the Case for Endorsement to be provided to the AISC in July 2019. <i>Training Package to be developed/revised:</i> Automotive Manufacturing Training Package (AUR) <i>Qualifications to be revised:</i> Certificate I in Automotive Manufacturing Certificate IV in Automotive Manufacturing Diploma of Automotive Manufacturing <i>Skill sets to be developed/revised:</i> 	

Project 1x – Automotive Manufacturing Qualifications

N/A
22 existing Units of Competency (UoC) to be revised

• Please refer to Appendix B for list of UoCs

Table 29: Project 1x – Ministers' Priorities

Reform	Evidence of reform being addressed
Removing obsolete and superfluous qualifications from the training system	These qualifications have zero enrolments and are not currently delivered by any Registered Training Organisations – they are obsolete and should be removed from the training system.
Making more information available about industry's expectations of training delivery	Training in this area is not expected by industry, it should therefore be removed.
Ensuring the training system better supports individuals to move easily from one related occupation to another	The qualifications are very specific to automotive manufacturing and do not allow learners to move from one industry to another, they should therefore be removed.
Improving the efficiency of the training system by creating units that can be owned and used by multiple industry sectors and housing these units in a work and participation bank	No new units are being developed for use across multiple industry sectors.
Fostering greater recognition of skill sets	If industry requires an advanced manufacturing skill set, we will develop one using the relevant units for the Certificate IV and Diploma in Automotive Manufacturing.

Consultation Plan

PwC's Skills for Australia intends to engage a wide range of stakeholders relevant to this sub sector of the automotive industries. Types of stakeholders to be consulted with include:

Table 30: Project 1x	- Review of Automotive	Manufacturing Qualification	s, Stakeholders to be engaged
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Employers	Industry associations/Peak bodies	RTOs	Public/Government bodies
 Volgren Vawdrey McNaughtans Sloanebuilt Trailers 	 Motor Traders Association (NSW, QLD, SA, WA, NT, ACT) Automobile Chamber of Commerce (VIC, TAS) Automotive Training Board of New South Wales 	 Enterprise RTOs Private and Community RTOs Technical and Further Education institutions (TAFEs) 	STAsLicensing bodies where applicable



Figure 3: Indicative Consultation Plan for Training Product Development



6 Appendix A - Administrative information

About the Industry Reference Committees

The five Automotive Industry Reference Committees include 60 members:

	Organisation	Title	IRC role	
Automotive Strat	tegic IRC			
Geoff Gwilym	Victorian Automobile Chamber of Commerce	Executive Director	IRC Chair	
Ian Curry	Australian Manufacturing Workers' Union	National Coordinator – Skills, Training & Apprenticeships Policy	IRC Deputy Chair	
Deborah Joyce	Automotive Training Board NSW	Executive Officer	IRC Member	
Mark Harper	Utilities Engineering Electrical and Automotive Training Council	Industry Consultant (Automotive and Engineering)	IRC Member	
Peter Blanshard	Institute of Automotive Mechanical Engineering	CEO	IRC Member	
Nigel Muller	Victorian Automobile Chamber of Commerce	Executive Manager, Training	IRC Member	
Greg Preston	Australia Association of Progressive Repairers	Executive Officer	IRC Member	
Todd Hacking	Heavy Vehicle Industry Australia	CEO	IRC Member	
Paul Kulpa	Motor Trades Association of Queensland	General Manager	IRC Member	
Automotive Ligh	t Vehicle IRC			
Nigel Muller	Victorian Automobile Chamber of Commerce (VACC)	Executive Manager, Training	IRC Chair	
Fiona Murphy	KMART Tyre and Auto	General Manager HR	IRC Deputy Chair	
Peter Blanshard	Institute of Automotive Mechanical Engineers	CEO	IRC Member	
Rod Cumming	Australian Refrigeration Council	CEO	IRC Member	
Greg Preston	Australian Association of Progressive Repairers	Executive Officer	IRC Member	
Lesley Yates	Australian Automotive Aftermarket Association	Senior Manager Government Relations	IRC Member	
Bruce Chellingworth	BJC Consulting	Consultant	IRC Member	
Rick Parker	Hyundai Motor Company Australia Pty Ltd	Senior Technical Trainer	IRC Member	

	Organisation	Title	IRC role	
Stuart Pascoe	Cornell Diesel Systems	Committee Member	IRC Member	
Martin Sanchez	Lonsdale Street Auto Electrics Pty. Ltd.	Company Owner	IRC Member	
Paul Unerkov	Motor Trade Association of South Australia	CEO	IRC Member	
Scott Batchelor	Australian Manufacturing Workers Union (AMWU)	Regional Secretary – Vehicle Division	IRC Member	
Automotive Heav	∕y Vehicle IRC			
Dale Henry	Work Management Solutions (WMS)	Asset Management Specialist	IRC Chair	
Phillip Hodges	Commercial Vehicles Industry Association of Australia	President	IRC Deputy Chair	
Gary Northover	Tractor & Machinery Association of Australia	Executive Director	IRC Member	
Paul Woodland	Heavy Vehicle Industry Australia	North Western Region Manager	IRC Member	
Wayne Allan	Department of Defence	National Technical Training Manager	IRC Member	
Chris Amos	Thiess Pty Ltd	Maintenance Training Manager	IRC Member	
David Mitchell	Institute of Automotive Mechanical Engineering	SA Operations Manager	IRC Member	
Darryl Piper	Case New Holland Industrial	Technical Training Manager – ANZ	IRC Member	
Gavin Manning	Construction and Mining Equipment Industry Group	National Apprentice Development Manager	IRC Member	
Vince Pepi	Australian Manufacturing Workers' Union	Union Organiser	IRC Member	
Patrick Thornton	Kangan Institute	Automotive Manager	IRC Member	
Automotive Vehi	cle Body Repair IRC			
Mark Czvitkovits	I-CAR Australia	CEO	IRC Chair	
Phil Nixon	Insurance Australia Group	Supply Chain Specialist	IRC Deputy Chair	
Shelley Holst	Capital SMART Repairs	General Manager Human Resources	IRC Member	
Darren Wales	Wales Truck Repairs	Managing Director	IRC Member	
Trevor Parkes	Parkes Body Works	Owner/Operator	IRC Member	
Norm Esmonde	Victorian Automobile Chamber of Commerce (VACC)	Apprenticeships Manager	IRC Member	
ТВС	Motor Trade Association of New South Wales (MTA-NSW)	TBC	IRC Member	

	Organisation	Title	IRC role	
Greg Preston	Australian Association of Progressive Repairers (AAPR)	Executive Officer	IRC Member	
Sean Morgan	Australian Manufacturing Workers' Union (AMWU)	NSW Vehicle Division Secretary	IRC Member	
Stevie-Cheree Cassidy	Youi	Technical Training and Development Manager	IRC Member	
Automotive Allie	d IRC			
Bruce Chellingworth	BJC Consulting	Consultant	IRC Chair	
Ian Coops	Hunts Marine	Sales Consultant	IRC Member	
Karl Fischer	Automotive Holdings Group	Sales Training and Development Manager	IRC Member	
Gary Atherton	Bendigo Kangan Institute	Team Leader – Mechanical Technology	IRC Member	
Tyler de Jager	Defense Maritime Services	Mechanical Technician	IRC Member	
Ian Fleet	Victorian Automobile Chamber of Commerce (VACC)	Apprenticeship Field Manager	IRC Member	
Paul Scagliotti	Institute of Automotive Mechanical Engineers	VIC and TAS Operations Manager	IRC Member	
Phil Esterman	Outdoor Power Equipment Association (OPEA)	Learning & Development Manager	IRC Member	
Peter Bourke	Bicycle Industries Australia (BIA)	General Manager	IRC Member	
Carl Rollinson	Yamaha Motor Australia	YTA Training Co-ordinator	IRC Member	
Stephen Moir	Motor Trades Association (MTA) WA	Group CEO	IRC Member	

About PwC's Skills for Australia

PwC's Skills for Australia supports the five Automotive Industry Reference Committees: Automotive Strategic IRC; Automotive Light Vehicle IRC; Automotive Heavy Vehicle IRC; Automotive Vehicle Body Repair IRC; and Automotive Allied IRC.

As a Skills Service Organisation (SSO), PwC's Skills for Australia is responsible for working with industry to:

- Research what skills are needed in our industries and businesses, both now and in the future, to provide the right skills to match our job needs; helping us to stay at the forefront of global competitiveness and support continued economic prosperity.
- Identify and understand current and emerging trends in the global and domestic economy and how they impact on Australia's skills needs.
- Work with the IRCs to revise our qualifications and training content to better match what people learn with the skills needs of our industries and businesses, giving our population the best possible chance of developing work ready skills.

7 Appendix B - 18/19 units for review

Summary:

Table 31: Total proposed changes to training products

Proposed changes	15	1t	1u	1 V	1X
Existing qualifications to be updated	3	1	1	2	0
Existing units to be updated	24	9	10	31	0
Existing skill sets to be updated	0	0	0	3	0
New qualifications to be created	0	0	0	0	0
New units to be created	0	0	5	1	0
New skill sets to be created	0	1	1	4	0
Existing qualifications to be deleted	0	1	0	0	3
Existing units to be reviewed for deletion	0	0	0	0	22

Units to be updated

Table 32: Project 1s – 24 units to be updated

UNIT CODE	UNIT TITLE
AURVTP004	Apply basic colour matching techniques using vehicle paint codes
AURVTP024	Apply clear over base multi-layer and pearl refinishing materials to vehicle body components
AURVTP023	Apply clear over base two-pack refinishing materials to vehicle body components
AURVTN035	Apply original equipment manufacturer repair procedures during vehicle repairs
AURVTP011	Apply solid acrylic two-pack materials to vehicle components
AURVTP025	Apply water-based refinishing materials to vehicle bodies and substrates
AURVTP014	Colour match multi-layer and clear over base two-pack paints on vehicles and components
AURVTP015	Match direct gloss solid paint colour on vehicles or components
AURVTP010	Prepare and operate vehicle paint drying equipment
AURVTP003	Prepare vehicle spray painting equipment for use
AURVTP013	Prepare vehicle substrates for refinishing
AURVTP016	Rectify and touch up vehicle direct gloss paint faults using two-pack systems
AURVTP017	Rectify and touch up vehicle paint faults using clear over base two-pack systems

AURVTP018	Rectify vehicle multi-layer and pearl paint faults using two-pack systems
AURVTG003	Remove and install butyl sealed windscreens
AURVTG004	Remove and install direct glazed windscreens
AURVTG005	Remove and install framed type windscreens
AURVTG012	Remove and install heavy vehicle rubber and direct glazed windscreens
AURVTG013	Remove and install large vehicle windscreens
AURVTG002	Remove and install rubber glazed windscreens
AURVTG009	Remove and install vehicle fixed body glass
AURVTG010	Remove and install vehicle movable body glass
AURVTP001	Remove paint from vehicle painted surfaces
AURVTG001	Repair laminated glass windscreens

Table 33: Project 1t – 9 units to be updated

Table 34: Project 1u – 10 units to be updated

UNIT CODE	UNIT TITLE
AURJTX003	Diagnose and repair motorcycle automatic transmissions
AURJTB001	Diagnose and repair motorcycle braking systems
AURJTX001	Diagnose and repair motorcycle clutch systems
AURJTQ002	Diagnose and repair motorcycle driveline systems
AURJTE001	Diagnose and repair motorcycle engines
AURJTX002	Diagnose and repair motorcycle manual transmissions
AURJTD004	Diagnose and repair motorcycle steering systems
AURJTD003	Diagnose and repair motorcycle suspension systems
AURJTE002	Diagnose complex faults in motorcycle engine and transmission systems
AURJTD005	Diagnose complex faults in motorcycle steering and suspension systems

Table	35:	Project	1 v -	31	units	to	be	updated	
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UNIT CODE	UNIT TITLE
AURETR035	Apply knowledge of petrol and diesel engine operation
AURETH001	Depower and reinitialise battery electric vehicles
AURETR032	Diagnose and repair automotive electrical systems
AURETR029	Diagnose and repair charging systems
AURETR024	Diagnose and repair compression ignition engine management systems
AURETB001	Diagnose and repair electric braking systems
AURETR043	Diagnose and repair electronic body management systems
AURETR031	Diagnose and repair ignition systems
AURETRo28	Diagnose and repair instruments and warning systems
AURETR044	Diagnose and repair integrated engine and transmission management systems
AURLTZ001	Diagnose and repair light vehicle emission control systems
AURLTE002	Diagnose and repair light vehicle engines
AURLTQ001	Diagnose and repair light vehicle final drive assemblies
AURLTF001	Diagnose and repair light vehicle mechanical fuel injection systems
AURETR020	Diagnose and repair network electronic control systems
AURETR023	Diagnose and repair spark ignition engine management systems
AURETR030	Diagnose and repair starting systems
AURETR022	Diagnose and repair vehicle dynamic control systems
AURETRoo4	Diagnose complex faults in convenience and entertainment systems
AURETH014	Diagnose complex faults in hybrid and battery electric vehicle network management systems
AURLTB004	Diagnose complex faults in light vehicle braking systems
AURETR037	Diagnose complex faults in light vehicle safety systems
AURLTD009	Diagnose complex faults in light vehicle steering and suspension systems
AURETR039	Diagnose complex faults in light vehicle theft-deterrent systems
AURETR038	Diagnose complex faults in motorcycle electrical and electronic systems
AURETR040	Diagnose complex faults in vehicle monitoring and protection systems
AURETRoo3	Identify automotive electrical systems and components
AURLTA001	Identify automotive mechanical systems and components
AURETR016	Read and apply vehicle wiring schematics and drawings
AURETR047	Recharge vehicle batteries
AURETR046	Remove and refit vehicle batteries
AURETR035	Apply knowledge of petrol and diesel engine operation
AURETH001	Depower and reinitialise battery electric vehicles

UNIT CODE	UNIT TITLE
AUMAFA001	Apply for jobs and undertake job interviews
AUMAKM002	Produce computer-aided drawings
AUMGTN001	Replace and repair vehicle body panels and fittings
AUMAMA003	Prepare new product designs
AUMAMA004	Coordinate automotive project activities
AUMAMM001	Influence and lead work groups in an automotive manufacturing workplace
AUMANA001	Prepare and document quotations
AUMAQA001	Apply quality assurance techniques
AUMGTR001	Install and replace vehicle electrical units and assemblies
AUMATA001	Develop documentation and procedures
AUMATA002	Conduct post-production inspections and tests
AUMATA006	Provide automotive manufacturing advice
AUMATA007	Conduct vehicle performance tests
AUMATK001	Use and maintain tools and equipment
AUMATK005	Calibrate measuring equipment
AUMATKoo7	Install vehicle plant, equipment and systems
AUMATKoo8	Maintain vehicle plant, tools, equipment and systems
AUMATK009	Repair vehicle plant, tools, equipment and systems
AUMATK010	Manufacture and modify vehicle plant, tools, equipment and systems
AUMATK011	Use technical data relating to plant, tools, equipment and systems
AUMATKoo4	Use and maintain measuring equipment
AUMATW002	Inspect welding

Table 36: Project 1x – 22 Units to be reviewed for deletion

Table 37: 6 Units to be created

PROJECT	NEW UNIT TITLE
1U	Inspect and service motorcycle engines
1U	Diagnose and repair motorcycle cooling systems
1U	Diagnose and repair motorcycle charging systems
1U	Diagnose and repair motorcycle starting systems
1U	Diagnose and repair motorcycle dynamic control systems
1V	Diagnose and repair vehicle safety systems

Table 38: 3 existing skill sets to be updated

SKILL SET CODE	SKILL SET TO BE UPDATED
AURSS00034	Battery Electric Vehicle Diagnosis and Repair Skill Set

AURSS00035	Battery Electric Vehicle Inspection and Servicing Skill Set
AURSS00037	Hybrid Electric Vehicle Inspection and Servicing Skill Set

Table 39: new skill sets to be created

PROJECT	SKILL SET TO BE CREATED
1T	Advanced Marine Mechanical Systems Skill Set
1U	Advanced Motorcycle Mechanical Systems Skill Set
1V	Advanced Mechanical Diagnosis Skill Set
1V	Advanced Light Vehicle Electrical Systems Skill Set
1V	Advanced Light Vehicle Mechanical Systems Skill Set
1V	Supplemental Restraint Systems Skill Set

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