Process Manufacturing, Recreational Vehicle and Laboratory Industry Reference Committee

Skills Forecast and Proposed Schedule of Work 2018-2022

MSM Manufacturing Training Package

May 2018

IBSA MANUFACTURING

Administrative Information

Name of Industry Reference Committee (IRC):
Process Manufacturing, Recreational Vehicle and Laboratory (PMRVL)

Name of Skills Service Organisation (SSO):
Innovation and Business Skills Australia (IBSA Manufacturing)

About the Industry Reference Committee

The **Process Manufacturing, Recreational Vehicle and Laboratory** Industry Reference Committee comprises nine members, and was constituted in April 2017.

The 2018 Industry Skills Forecast and Proposed Schedule of Work was reviewed and approved by the membership below.

Mr Keith Monaghan (Chair)
Mr Ian Curry
Mr Stuart Lamont
Ms Leah Simmons
Ms Julie Warren
Mr Nigel Haywood
Ms Ceridwen Jones
Mr Han Michel
Mr Grahame Aston

Industry Reference Committee Signoff

The 2018 MSM Manufacturing Training Package Skills Forecast and Proposed Schedule of Work was approved as the result of a properly constituted IRC decision.

IRC Chair: Mr Keith Monaghan

Date: May 2018

www.ibsa.org.au
manufacturing@ibsa.org.au

IBSA Manufacturing
Level 11, 176 Wellington Parade
East Melbourne, Victoria, 3002

Call (03) 9815 7099

This IRC Skills Forecast and Proposed Schedule of Work has been prepared on behalf of the PMRVL Industry Reference Committee for submission to the Australian Industry Skills Committee (AISC).

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Contents

Executive Summary

The Industry Reference Committee (IRC) Skills Forecast and Proposed Schedule of Work identifies priorities for training package development work to meet the needs of industry. This document is based on research, analysis and consultations with IRC members and other stakeholders and provides evidence of current and emerging industry skills needs.

What are the Process Manufacturing and Recreational Vehicle Industries?

The process manufacturing sector produces goods that are manufactured in bulk quantities from ingredients or raw substances, as opposed to goods manufactured in discrete and countable units from parts. Process-manufactured goods include food, beverages, refined oil, gasoline, pharmaceuticals, chemicals and plastics. The process manufacturing qualifications included in the MSM Manufacturing training package are generic and designed for workers in production support roles, rather than in the manufacture of specific goods.

The Recreational Vehicle qualifications in the MSM Manufacturing training package cover the three areas of:

- recreational vehicle manufacture
- recreational vehicle service and repair
- recreational vehicle and accessories retailing.

The recreational vehicle (RV) sector includes motor homes, caravans, camper trailers, slide-on campers and fifth wheelers.

Critical Workforce Challenges and Opportunities

Critical workforce challenges and opportunities facing the process manufacturing and recreational vehicle industries include:

- declining employment in process manufacturing industries, and the impact of automation, robotics and digitalisation, which are likely to result in the need for re-training and upskilling amongst workers
- the loss of the automotive industry in Australia, which will potentially impact upon the availability of skilled labour for the RV sector. At the same time, the RV sector is experiencing growth and is expected to continue to do so, providing increasing employment and skill development opportunities
- advances in technology and manufacturing processes, which will impact upon both the process manufacturing and RV sectors in terms of new skills, new combinations of skills and new ways of conducting business
- expected growth in activity and employment in the surface preparation and coating sector (which is also covered by the MSM Manufacturing Training Package), which may increase demand for skills
- new legislation regarding Road Vehicle Standards scheduled for introduction in 2018, which is expected to impact upon the RV sector.

Forecasting Skills Priorities

These workforce challenges and opportunities have implications for skill development priorities, including:

- increased product safety standards to be met in the manufacture of recreational vehicles
- new or more advanced skills, and new combinations of skills needed to meet changes in technology and advanced manufacturing processes
- the potential need for business skills to address skill gaps within the RV sector.

Training Package Priorities

The Proposed Schedule of Work 2018-19 to 2021-22 was developed by the IRC, with support from IBSA Manufacturing, based on identified industry trends. The Schedule lists the priorities over the next four years, the rationale and proposed timeframes for these activities.

There are no items that have been identified as critical or proposed for inclusion as priorities for 2018-2019.

In response to current and emerging skills needs, the IRC has identified two priorities to be considered over the period 2020-2022.

- **Recreational Vehicles:** Review of all recreational vehicle qualifications to reflect requirements of the new Road Vehicle Standards Act, to ensure currency in relation to any new trends and changes in practice in the sector and to consider whether there is a need for inclusion of business skills within recreational vehicle qualifications.
- **Process Manufacturing:** Review of MSM Manufacturing process manufacturing qualifications for currency and relevance and consideration of the introduction of specialisations.

Sector Overview

Industry Snapshot

The MSM Manufacturing Training Package covers a range of sectors of the manufacturing industry:

- Manufacturing Pathways and Vocational Education and Training (VET) in Schools (2 qualifications)
- Process manufacturing (4 qualifications)
- Surface preparation and coating (1 qualification)
- Production management (1 qualification)
- Recreational vehicles (8 qualifications)
- Trade measurement (skill sets)
- High risk work boiler operations (skill sets)
- Water jetting (skill sets).

A full list of these qualifications and skill sets can be found in the section on Training Delivery.

The three key sectors covered by this training package are **Process Manufacturing, Recreational Vehicles** and **Surface Preparation and Coating,** with the remaining qualifications and specialist technical units of competency being subsets of these.

A summary of the business landscape for each of these three sectors can be found in Table 1 below, with further details in the sections that follow.

Table 1 – Business landscape in key sectors/subsectors

Industry Sector/ Subsector	Number of Businesses at 30 June 2016	% Change from 30 June 2015	Types of Businesses
Process Manufacturing – Petroleum, coal, chemicals and rubber products	5,826	0.4%	42.3% non-employing 46.1% small 10.6% medium 1.0% large
Process Manufacturing – Non-metallic minerals	3,479	0.7%	42.4% non-employing 50.2% small 7.1% medium 0.3% large
Recreational Vehicles	Data not available – is part of the larger Motor Vehicle and Motor Vehicle Part Manufacturing sector: 3,599	 -0.3%	Predominantly small and non-employing 43.7% non-employing 46.6% small 9.0% medium 0.7% large
Surface Preparation and Coating	1,504	-2%	36.9% non-employing 57.1% small 6.0% medium

Source: ABS, 2017, 8165.0 Counts of Australian Businesses, including Entries and Exits, Jun 2012 to Jun 2016

Process Manufacturing

Process manufacturing is the production of goods that are manufactured in bulk quantities from ingredients or raw substances, as opposed to goods manufactured in discrete and countable units from parts. Process-manufactured goods include food, beverages, refined oil, gasoline, pharmaceuticals, chemicals and plastics.

The process manufacturing qualifications in the MSM Manufacturing Training Package are generic and designed for workers in process manufacturing production support roles who may not have the opportunity to develop competency in sufficient technical units related directly to producing goods. They also apply to employees who operate across more than one area within the process manufacturing sector or those with responsibility for 'specialised processes' when required. The production management qualification contained in the MSM Manufacturing Training Package is focused on the planning, directing and coordinating of production in a process manufacturing environment. Due to its generic nature, it can also be applied in other manufacturing environments.

More specialised technical qualifications for those workers producing specific process-manufactured products are found in the training packages related to PMA Chemical, Hydrocarbons and Refining, PMB Plastics, Rubber and Cablemaking, and PMC Manufactured Mineral Products.

Business Landscape

Due to the generic nature of the MSM Manufacturing process manufacturing qualifications, it is difficult to quantify the number of businesses which may potentially use them (as opposed to the more specific industry qualifications). However, a number of observations can be made about the two main manufacturing sub-sectors for which the MSM Manufacturing process manufacturing qualifications were designed.

The Performance of Manufacturing Index (PMI) shows that **Petroleum, coal, chemicals and rubber products** (a large sub-sector which includes fertilisers, pharmaceuticals, toiletries and health supplements, as well as construction-related products such as paints, adhesives and surface treatments) has been growing continuously since 2015.[1] ABS data indicates that there were nearly 6,000 businesses operating in this sub-sector in mid-2016.[2] The large majority of these businesses are small or non-employing, with only 12% medium or large.

The PMI also shows that **Non-metallic minerals**, one of the smaller sub-sectors, experienced very strong growth throughout 2017, due to demand from the building and construction sector.[3] According to ABS data, there were nearly 3,500 businesses operating in this sub-sector in mid-2016.[4] Once again, the large majority of these businesses are small or non-employing, with around 8% medium or large.

Within these sub-sectors, however, there are areas, such as petroleum and coal-related manufacturing and synthetic rubber and resin manufacturing, in which the number of operating businesses is declining.

Key Industry Stakeholders

Peak bodies in this sector are those related to manufacturing, including AiGroup and Manufacturing Australia, as well as those related to the individual sub-sectors.

Unions representing this sector are the Australian Workers Union (AWU), Australian Manufacturing Workers Union (AMWU) and the National Union of Workers (NUW).

Regulation and Licensing

The level of regulation across the process manufacturing sector is high and increasing, with businesses in the sector having to comply with Commonwealth, state and local government environmental standards, product safety standards and occupational health and safety regulations, as well as a wide range of sub-sector-specific regulations.

1 AiGroup, 2017, Performance of Manufacturing Index reports

2 ABS, 2017, 8165.0 Counts of Australian Businesses, including Entries and Exits, Jun 2012 to Jun 2016

3 AiGroup, 2017, Performance of Manufacturing Index reports

4 ABS, 2017, 8165.0 Counts of Australian Businesses, including Entries and Exits, Jun 2012 to Jun 2016

Recreational Vehicles

The recreational vehicle (RV) sector manufactures, repairs, services and retails recreational vehicles and accessories, including motor homes, caravans, camper trailers, slide-on campers and fifth wheelers.

Unlike the broader Motor Vehicle and Motor Vehicle Part Manufacturing sector to which the RV sector belongs, RV manufacturing in Australia is growing. Over 22,000 units were constructed in 2017; a 2.5% increase on 2016. The number of units manufactured has consistently exceeded 20,000 units since 2010.

RV registrations also grew by over 5% from 2016, which equates to a total of nearly 650,000 caravan and campervans on Australia's roads. Since 2011, caravan registrations have grown by 30% and campervans by 20% – a trend that continues to highlight recreational vehicles as the fastest growing registration type in Australia.[5]

Business Landscape

Within currently available data, it is not possible to distinguish between recreational vehicles and other automotive vehicles in terms of businesses involved in sales, manufacture, service and repair. To address this, peak bodies in the sector are conducting an industry audit, which should provide more specific data later in 2018.

The sector predominantly comprises micro businesses. However, the manufacturing area is dominated by:

- Jayco Corporation Pty Ltd – a large company with more than 1,000 employees across Australia, headquartered in Dandenong South, Victoria
- Fleetwood Corporation Limited – a large manufacturer of caravans, with more than 200 employees, headquartered in East Perth, Western Australia
- Avida - a large manufacturer of recreational vehicles, with more than 200 employees, headquartered in Emu Plains, New South Wales
- New Age Caravans – a medium company with more than 130 employees, based in Epping, Victoria.

Key Industry Stakeholders

The key industry associations related to RV manufacture, service and repair and sales are the:

- Caravan Industry Association of Australia
- Caravan, Camping and Touring Industry and Manufactured Housing Industry Association of NSW Limited
- Caravan Industry Association Western Australia Incorporated
- Caravan Trade and Industries Association of Queensland
- Caravan and Camping Industries Association of South Australia Incorporated
- Caravan Trade and Industries Association of Victoria.

5 Caravan Industry Association of Australia, 2017, Caravan and Camping State of Industry

Regulation and Licensing

The industry is governed by Vehicle Safety Standards – a division of the Commonwealth Department of Infrastructure and Regional Development. Most recreational vehicles come under the federal regulation for manufacture of light trailers (VSB1). Many of the inhabitation features of the industry are covered by Australian Standards which are released via Standards Australia and imposed by individual states. However, a challenge for the industry is inconsistency in the extent to which jurisdictions have adopted the most current version of these standards.

Each state also deals with gas, electrical and plumbing requirements for recreational vehicles through various state-based regulators, with consumer matters under the Australian Consumer Law dealt with by the Australian Competition and Consumer Commission federally, as well as the various state-based Fair Trading offices.

Surface Preparation and Coating

The surface preparation and coating industry specialises in treating the surface of a substance or material to increase its adhesion to a coating, and then applying a coating to the prepared surface. The industry treats a range of metal products (mainly dealing with heavy industry, marine infrastructure and built infrastructure) to increase durability, provide protection against rust and to achieve a decorative finish.

Business Landscape

According to IBISWorld[6], weak demand from domestic metal manufacturing markets has limited growth in revenue in the Australian industry, contrary to the global trend of increasing growth due to infrastructure investment in Asia and the Middle East. However, it is predicted that industry performance will improve in the next 5 years in line with improved demand from infrastructure, mining and building markets, and increased investment in defence programs.

According to ABS data[7], there were over 1,500 businesses operating in this sector in mid-2016, which was a decline of 2% from the previous year. Once again, the large majority of these businesses are small or non-employing, with only 6% medium and no large businesses in this industry segment. This is due to the fact that most businesses in this sector are located close to their clients to reduce transport costs, and therefore tend to specialise in the processes and services needed by their clients, rather than offering a diverse range of services from a more centralised location.[8]

Key Industry Stakeholders

The two largest businesses in this sector, Valmont Group Holdings Pty Limited and PPG Industries Australia Pty Ltd, account for 5.4% and 11.2% of the market share respectively.[9]

Peak bodies in this sector include the Galvanizers Association of Australia (GAA) and the Australasian Institute of Surface Finishing (AISF).

6 IBISWorld, 2017, Industry Report C2293 - Metal Coating and Finishing in Australia

7 AiGroup, 2017, Performance of Manufacturing Index reports

8 IBISWorld, 2017, Industry Report C2293 - Metal Coating and Finishing in Australia

9 IBISWorld, 2017, Industry Report C2293 - Metal Coating and Finishing in Australia

Regulation and Licensing

Businesses in this sector are subject to local and state government zoning and environmental legislation and requirements, particularly in relation to noise and air pollution and the handling and disposal of hazardous materials and waste.

Training Snapshot

Learner Training Profile[10]

In 2016, a learner enrolled in a qualification from the MSM Manufacturing Training Package was more likely to be:

- Enrolled in a Certificate III level qualification
- Studying in Victoria
- Aged 19 years or younger
- Male
- Not an apprentice or trainee
- Enrolled with a private Registered Training Organisation (RTO).

Over the period 2014-2016:

- The total number of enrolments in MSM Manufacturing Training Package qualifications almost halved (from over 16,000 down to nearly 8,500)
- The largest proportions of enrolments have consistently been in VIC (over 40% in 2016), followed by QLD (over 30% in 2016)
- The number of young learners (aged 19 and under) has declined less than the decline for other age groups
- Males consistently account for around 80% of enrolments.

Traineeships are available in four qualifications within the process manufacturing area. However, the Certificate III in Process Manufacturing is the only qualification with any significant numbers of trainees (around 30% of all enrolments in 2016).

In the Recreational Vehicle sector, the Certificate III in Recreational Vehicle Manufacturing and in Service and Repair are available as traineeships. The manufacturing qualification is available as an apprenticeship in QLD. The data indicates that all enrolments in these two qualifications in 2016 were traineeships or apprenticeships.

Appendix A presents a graphical snapshot of enrolments in qualifications from the MSM Manufacturing Training Package.

10 VOCSTATS VET Provider Collection. 2016 Government Funded and Total VET Activity Program enrolments extracted September 2017.

Training Delivery

As illustrated in Table 2 following, delivery by private RTOs accounts for the majority of enrolments, although this has declined slightly from over 70% in 2015 to about 65% in 2016. Government-funded training enrolments are roughly half of the Total VET Activity enrolments.

Table 2 - Program enrolments in MSM Manufacturing qualifications by Training Organisation type

Training Organisation Type	Government Funded Enrolments 2015	Government Funded Enrolments 2016	Total VET Enrolments 2015	Total VET Enrolments 2016	Percentage Training Organisation Type for Total VET Enrolments 2016 %
TAFE	488	634	853	1,110	13.1%
University	31	32	84	49	0.6%
Enterprise provider	147	158	407	250	3.0%
Private training provider	5,008	3,481	8,284	5,364	63.5%
School	180	118	1,879	1,672	19.8%
Community education provider	-	-	-	-	0.0%
Totals	5,854	4,423	11,507	8,445	13.1%

Source: VOCSTATS VET Provider Collection. 2016 Government Funded and Total VET Activity Program enrolments extracted September 2017

Process Manufacturing

In February 2018, in the MSM Manufacturing process manufacturing and related qualification areas:[11]

- There were 42 registered providers with approved scope to deliver the popular Certificate III in Process Manufacturing. These were predominantly private training providers
- Certificates I, II and IV in Process Manufacturing were on scope for between 4 and 16 providers, which were once again predominantly private training providers
- The pathway/VET in Schools qualifications of Certificate I in Manufacturing (Pathways) and Certificate II in Manufacturing Technology had 47 and 19 registered providers respectively (which are predominantly schools)
- There were no providers registered to deliver the Diploma of Production Management.

Recreational Vehicles

In the recreational vehicles area there were very few providers registered to deliver training, and all of them were public providers:[12]

- The Certificate II in Recreational Vehicle Manufacturing was on the scope of registration for TAFE Queensland and South Metropolitan TAFE in WA, while the Certificate II in Recreational Vehicle Service and Repair was only on the scope of TAFE Queensland
- The Certificate III in Recreational Vehicle Manufacturing was on scope for 9 public providers in locations across QLD, NSW, VIC and WA, while the Certificate III in Recreational Vehicle Service and Repair was on scope for 6 public providers across QLD, NSW and VIC. One of these providers, Bendigo Kangan Institute, had scope to deliver both of these Certificate III qualifications in all states and territories
- There were no providers registered to deliver the Certificate III or IV in Recreational Vehicle and Accessories Retailing or the Certificate IV or Diploma of Recreational Vehicles.

Surface Coating

For the Certificate III in Surface Preparation and Coating Application qualification, there were 8 registered providers (a mix of public and private), located across NSW, VIC and WA[13]. However, 5 of the 8 organisations had scope to deliver this qualification across all states and territories.

11 Data accessed from https://training.gov.au/ on 13 February 2018

12 Data accessed from https://training.gov.au/ on 13 February 2018

13 Data accessed from https://training.gov.au/ on 13 February 2018

Qualifications Available

The following qualifications and skill sets are contained in the MSM Manufacturing Training Package:

Process Manufacturing

- MSM10116 Certificate I in Process Manufacturing
- MSM20116 Certificate II in Process Manufacturing
- MSM30116 Certificate III in Process Manufacturing
- MSM40116 Certificate IV in Process Manufacturing

Related Qualifications

- MSM10216 Certificate I in Manufacturing (Pathways)
- MSM20216 Certificate II in Manufacturing Technology
- MSM50316 Diploma of Production Management

Recreational Vehicles

- MSM21115 Certificate II in Recreational Vehicle Manufacturing
- MSM21015 Certificate II in Recreational Vehicle Service and Repair
- MSM31215 Certificate III in Recreational Vehicle and Accessories Retailing
- MSM31115 Certificate III in Recreational Vehicle Manufacturing
- MSM31015 Certificate III in Recreational Vehicle Service and Repair
- MSM41115 Certificate IV in Recreational Vehicle and Accessories Retailing
- MSM41015 Certificate IV in Recreational Vehicles
- MSM51015 Diploma of Recreational Vehicles

Surface Preparation and Coating

- MSM30216 Certificate III in Surface Preparation and Coating Application

Skill Sets

- MSMSS00001 Licence to operate a standard boiler
- MSMSS00002 Licence to operate an advanced boiler
- MSMSS00003 Use high pressure water jetting equipment
- MSMSS00004 Operate a high pressure water jetting system
- MSMSS00005 Operate a drain cleaning system
- MSMSS00006 Operate a vacuum loading system
- MSMSS00007 Trade Measurement Inspection
- MSMSS00008 Trade Measurement Verification (Complex Measuring Instrument)
- MSMSS00009 Trade Measurement Verification (Limited Weighing Instrument)
- MSMSS00010 Trade Measurement Verification (Liquid Measuring Instrument Using Volume Measures)
- MSMSS00011 Trade Measurement Verification (Simple Measuring Instrument)
- MSMSS00012 Trade Measurement Verification (Simple Measure)
- MSMSS00013 Leading Hand/Supervisor
- MSMSS00014 Confined space work team

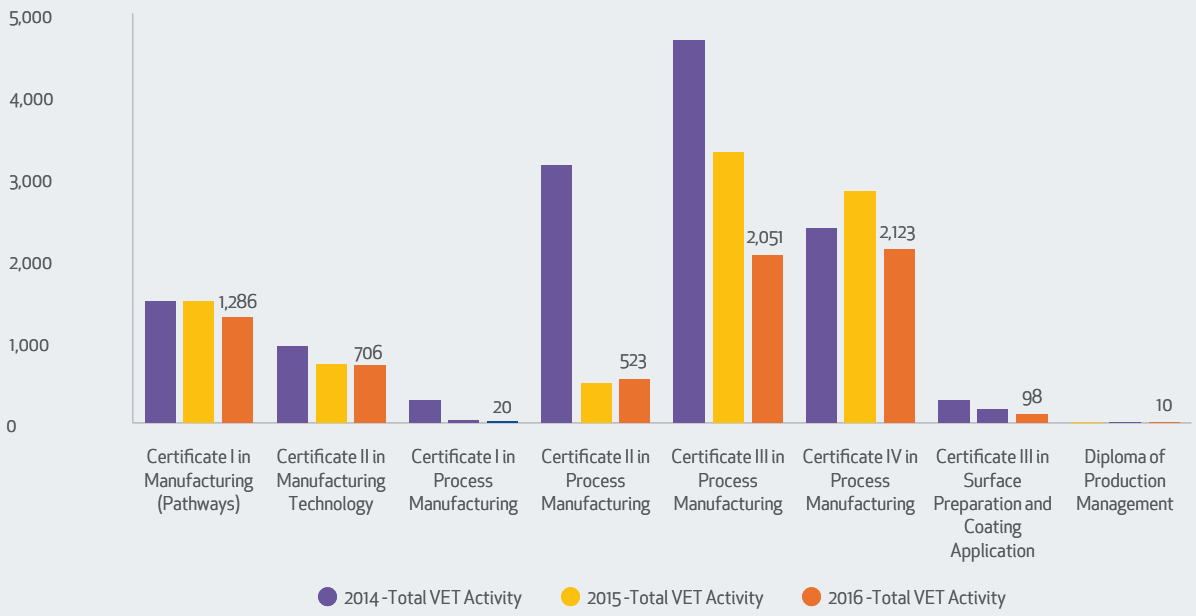
Source: https://training.gov.au/Search

A project is currently underway to develop a new qualification in fenestration (related to the manufacture of windows, louvres, skylights and other glass products used in building openings) for inclusion in the MSM Manufacturing Training Package. Further details can be found in the section on Training Product Review – Current Activities.

Qualification Uptake

The uptake of qualifications in the MSM Manufacturing Training Package is illustrated in Figures 1 and 2 below.

Figure 1 – Enrolments in Process Manufacturing and related qualifications and Surface Preparation and Coating



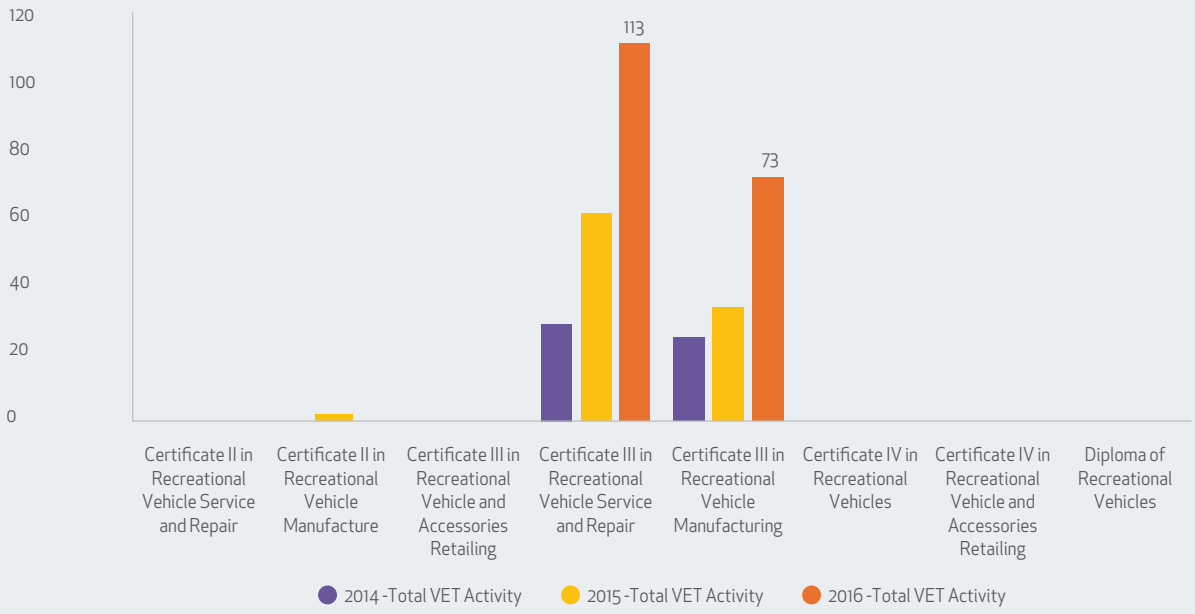
Source: VOCSTATS, extracted on 18/09/2017

The vast majority of recorded 2016 Total VET Activity enrolments in the MSM Manufacturing Training Package are in the Certificate III and IV in Process Manufacturing, respectively accounting for about 30% each of all enrolments. The pathways/VET in Schools qualifications of Certificate I in Manufacturing (Pathways) and Certificate II in Manufacturing Technology account for a further 26% of enrolments.

Enrolments across all qualifications have declined over the period of 2014-2016, with the exception of the Certificate II in Process Manufacturing, which has increased very slightly from 2015 to 2016. Many RTOs that have the Certificate III listed on scope are no longer delivering the qualification – despite the availability of government-funded traineeships in some jurisdictions. This may well be an indicator of declining industry demand.

Consultations indicated that the broad nature of the process manufacturing qualifications means that they do not necessarily lead to a clear vocational outcome. This creates confusion for employers seeking to employ workers with these qualifications, as the variability in qualification outcome is not clear, nor the type of skills the learners actually possess.

Figure 2 – Enrolments in Recreational Vehicles qualifications



Source: VOCSTATS, extracted on 18/09/2017. VOCSATATS data are 'randomly' adjusted by small amounts by a data perturbation tool to avoid the release of confidential data. Hence numbers are only approximate. While the perturbation impact is negligible for most practical purposes, the effect can be significant and must be considered when interpreting small numbers

For the 2014-2016 period there was a small but increasing number of reported enrolments in the recreational vehicle area. Almost all of these enrolments are government funded.

Low enrolments in the majority of recreational vehicle qualifications reflects feedback from industry about the lack of an 'accredited training culture' in the industry. This is apparent in the low numbers of registered providers with the qualifications on scope and absence of government funding. However, concerted efforts by RV peak bodies to raise awareness of the available qualifications and the value of training is resulting in increasing numbers of enrolments, particularly in Victoria and New South Wales, with further increases expected into the future. Consultations suggest that government funding arrangements will continue to be a big factor influencing the numbers of enrolments.

Challenges and Opportunities

Megatrends affecting all of the sectors covered by the PMRVL IRC were identified by IRC members in a future skills workshop conducted in 2017. A summary of the outcomes of this workshop can be found in **Appendix B**.

More specific challenges and opportunities for the sectors related to the MSM Manufacturing Training Package are discussed below.

For Industry and Employers

Due to the generic nature of the process manufacturing qualifications, the challenges and opportunities facing the sector are similar to those faced by manufacturing as a whole. However, those faced by the surface preparation and coating and recreational vehicles sectors are more specific.

Society and Culture

Camping and caravanning are a quintessential part of Australian culture, with 90% of activity in Australia attributable to domestic travellers.[14] Consequently, while the broader automotive manufacturing industry in Australia is in decline, the RV sector continues to grow, driven by demand from baby boomers and young families, and to a lesser extent, by retirees.

A lack of understanding of the benefits of training is a significant issue within this ageing, male-dominated sector, which is reflected in the lack of uptake of training in MSM Manufacturing Training Package Qualifications.

Business and Economics

Industry consultations in the RV sector suggest that while many of the businesses in the sector are confident of their abilities in relation to the manufacture, repair or sale of recreational vehicles, they may not be as capable at running their business. As the sector comprises many small firms, there are challenges in terms of innovation, productivity, regulatory compliance, skills and training. Businesses within the sector report being too heavily engaged with day-to-day operations and too thinly capitalised to focus on workforce planning and development.

Within the surface preparation and coating sector, demand from heavy and civil engineering construction and the world price of zinc are the key drivers of performance. In 2016-17, demand from heavy and civil engineering construction dropped, threatening the performance of the industry. The scaling back of investment in the mining industry has also contributed to a sharp decline in industry revenue. The world price of zinc, however, has recently risen, which may see a corresponding rise in service and product processes.

14 Houston Group, 2016, Towards 2030: A connected future, Caravan Industry Association of Australia

Resources and Environment

The demand for environmentally sustainable products and practices both from consumers and in response to legislation/regulation is driving businesses in all three sectors to continually improve their processes and products.

The demand for more environmentally sustainable products is driving much of the technology development in the RV sector, such as solar power and increased battery storage, which may lead to the development of hybrid and electric RVs in the future. Australian manufacturers of RVs have the potential to increase their competitiveness in the market (particularly in relation to cheaper imports) through making their products more innovative and environmentally friendly.

The economic outcomes of adopting more sustainable practices are of particular importance in the process manufacturing area, with improvements being sought through the adoption of competitive systems and practices.

Technology

Advances in technology are creating both the most significant challenges and the most significant opportunities for all three sectors.

As for the broader manufacturing sector, global trends around automation, digitalisation and robotics are impacting on the ways in which work is conducted and the skills needed to do so, as well as providing new business opportunities and increased efficiency and productivity for businesses.

Often captured under the term 'Industry 4.0', these changes are being driven by several major disruptions: rising data volumes, increased computational power and connectivity, the emergence of analytics and business-intelligence capabilities, new forms of human-machine interaction, and improvements in transferring digital instructions to the physical world. The adoption of information and communication technologies (ICT) in the manufacturing industry will lead to the creation of more sophisticated production systems, and enable the implementation of innovative business models. There is also a move towards the creation of global standards for products and services to support these changes.

In the process manufacturing area, automation and robotics are creating new efficiencies for those that can afford to adopt new machines and technology. This is particularly important for businesses trying to remain competitive (particularly smaller businesses) in the face of markets being flooded with cheap overseas imports.

As routine, repetitive and predictable tasks become increasingly automated, skill demands will move to non-automatable tasks – particularly those involving problem solving and interpersonal skills.

Increased automation in surface preparation and coating has the potential to support growth of the industry but is likely to impact on skills and jobs. Surface preparation often involves 'blasting' a surface with particulate matter to remove imperfections and various mineral/organic deposits, which can be done more safely and efficiently by robotic machinery. Firms that adopt new technology to automate are likely to improve productivity and product quality while reducing costs, but this may reduce the number of jobs available and change the profile of necessary skills for these occupations.

The manufacturing side of the RV sector recognises the need to embrace new thinking and technology and to experiment and innovate. With technology becoming more accessible and affordable, consumers are demanding that their recreational vehicles also have features which integrate this new technology. This includes features such as solar, wi-fi, keyless entry, wireless technology and battery management systems. At the same time, strong, lightweight products and materials being manufactured in Europe have already begun to make their way into Australia, and are being used to reduce weight within RV products. With the departure of the car industry from Australia, many of their processing techniques are being adapted into the RV industry with advanced manufacturing technology associated with robotics, composites, 3D printing, augmented and virtual reality now becoming legitimate business tools within the sector.

Political and Institutional

In the RV industry, a lack of enforcement of regulation for new manufactured products and manufacturing techniques is creating a significant challenge in ensuring product quality across the sector, as technology is moving faster than the pace of regulation and standards.

In addition, there is currently great variation from state to state in definitional interpretation and application of current regulations. Given that RV products are mobile (i.e. sold and travelling interstate), the differences in licensing and compliance requirements between jurisdictions mean that products being sold or repaired may be subject to very different regulations from the original manufactured material.

The upcoming Road Vehicle Standards Act (RVSA) legislative reform is the largest change to federal vehicle legislation in the past three decades. An exposure draft was released in December 2017, with the Bill expected to be passed in mid-2018. This will provide an administrative framework which will toughen up compliance enforcement across the RV sector, making a training culture even more important.

Supply Side Challenges and Opportunities

For the RV sector, the absence of available government funding for training and a lack of training providers delivering sector-specific training were raised as significant issues.

Consultations have identified that, historically, training providers have seen the RV sector as 'niche' and when a training provider had tried to deliver into the caravan and RV industry over the past decade they struggled to deliver training which was relevant to the RV sector. The result is that the sector has not experienced the outcomes from training required to improve their business.

A lack of industry trainers has meant that trainers delivering training are typically being sourced from other industries (e.g. automotive) and not the RV industry.

An important component of the funding issue is ensuring that there is greater recognition of the fact that many of the skills required within the construction, retail and repair of the recreational vehicle sector are the same as those needed in other occupations that are on state and federal skills shortages lists.

In the process manufacturing sector, employers report difficulties in sourcing workers with the appropriate skills, even when they have relevant qualifications. Consultations suggest that this is due to the extremely broad/generic nature of qualifications in this area, which make it impossible for an employer to know whether the specialised skills they require in their business have been covered in the qualification.

For Learners and Training Package Development

The difficulties experienced by employers in the process manufacturing sector in identifying with qualifications in this area suggest that there may be an opportunity to review the structure of these qualifications. Some have suggested that the introduction of streaming according to various specialisations may assist in addressing this problem.

Due to the fact that the majority of operators are micro businesses in the recreational vehicle sector, skills related to aspects of business management could be beneficial in qualifications.

Cross-industry Challenges and Opportunities

The impact of automation, digitalisation and robotics is an issue that is also relevant to many other industry sectors, particularly within the manufacturing area.

Employment and Skills Outlook

Employment Outlook

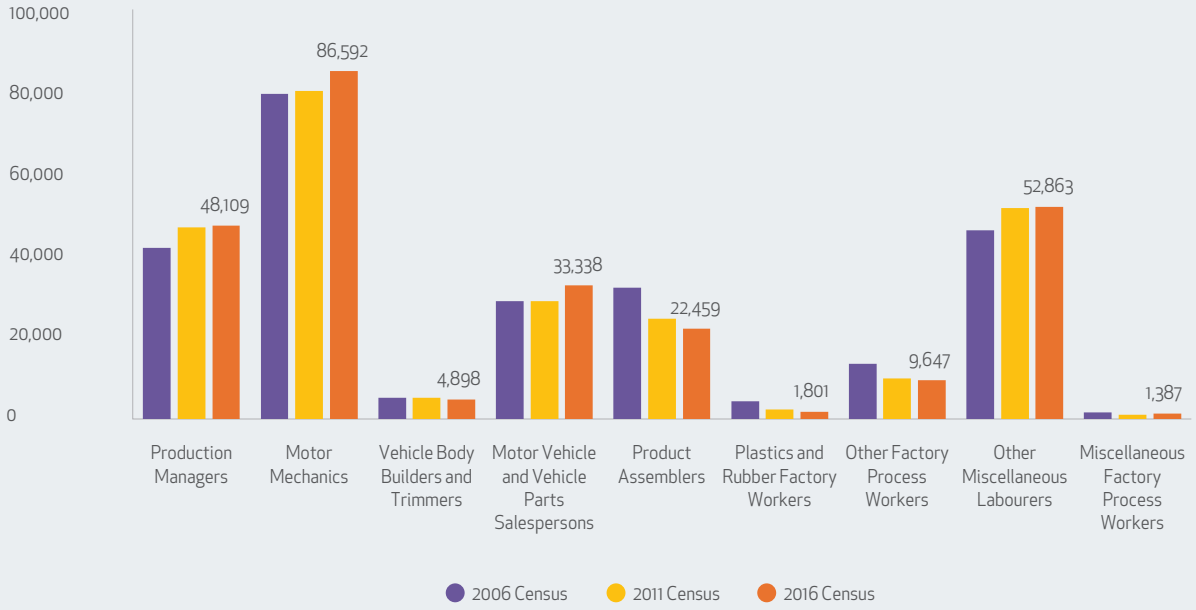
Data on employment trends and projections of the broader occupations and industries to which MSM Manufacturing qualifications relate are illustrated in Figure 3 and Table 3 below. This data needs to be considered with the following in mind:

- Process manufacturing qualifications are broad in nature and apply to employees for whom the more industry-specific technical qualifications are not relevant
- Recreational vehicles occupations sit within a much larger sector of vehicle manufacturing, repairs and sales, the characteristics of which are quite different to those of the recreational vehicles sector
- Surface preparation and coating is a specialised sector which sits within the Other Fabricated Metal Product Manufacturing sector and sheet metal trades occupations, the characteristics of which may not reflect those of the surface preparation and coating sub-group.

With these considerations in mind, the following observations can be made:

- Employment across all occupations is male dominated (between 75% and over 99% male in 2016)
- Employment for production managers has increased by nearly 15% over the period 2006-2016
- Employment projections predict a downturn in employment in the Fabricated Metal Product Manufacturing sector (of which surface preparation and coating is a subset) over the next five years. However, IBISWorld reports an expected recovery in performance of the more specific metal coating and finishing sub-sector over the same period.
- Employment projections for process manufacturing-related sectors are mixed, with decreases predicted in the petroleum and coal, polymer and rubber, and non-metallic mineral sectors, and a slight increase in the chemical sector
- In the broader motor vehicle area, to which RV repair and retail occupations belong, employment for motor mechanics, miscellaneous labourers, which covers mechanic's assistants, and motor vehicle and parts occupations have increased noticeably over the 10 years to 2016. Employment in the retailing area is projected to continue to increase over the next five years, while the repair and maintenance area is projected to remain stable
- A decline in employment for vehicle body builders and trimmers and product assemblers (which include RV manufacturing roles) has been experienced in the past 10 years, and further significant declines in employment are predicted for motor vehicle and parts manufacturing over the next five years. However, as highlighted earlier, the recreational vehicle sector is experiencing growth and is not expected to follow the pattern of the broader sector.

Figure 3 – Employment in Australian and New Zealand Standard Classification of Occupations (ANZSCO) occupations related to MSM Manufacturing qualifications



Source: ABS 2006, 2011 and 2016 Census Data

Table 3 – Employment growth and projections using the Australian and New Zealand Standard Classification of Occupations (ANZSCO)

ANZSIC Code	Industry	Employment level – May 2017 ('000)	Projected employment growth - five years to May 2022 ('000)	Projected employment growth - five years to May 2022 (%)	Projected employment – May 2022 ('000)
17	Petroleum and Coal Product Manufacturing	6.1	-1.2	-19.4	4.9
18	Basic Chemical and Chemical Product Manufacturing	52.8	2.6	4.9	55.4
19	Polymer Product and Rubber Product Manufacturing	33.7	-3.3	-9.9	30.4
20	Non-Metallic Mineral Product Manufacturing	33.6	-2.7	-8.2	30.9
229	Other Fabricated Metal Product Manufacturing	24.1	-3.0	-12.5	21.1
231	Motor Vehicle and Motor Vehicle Part Manufacturing	47.4	-27.7	-58.5	19.6
391	Motor Vehicle Retailing	77.1	7.8	10.1	84.9
392	Motor Vehicle Parts and Tyre Retailing	29.8	0.8	2.8	30.7
941	Automotive Repair and Maintenance	145.1	0.0	0.0	145.1

Source: Labour Market Information Portal (LMIP), Department of Jobs and Small Business (formerly the Department of Employment) ANZSIC: Australian and New Zealand Standard Industrial Classification available at http://www.abs.gov.au/

Details of the alignment between MSM Manufacturing qualifications and the ANZSCO occupation classifications can be found in **Appendix C**, and details of the alignment between ANZSIC industry classifications and MSM Manufacturing qualifications can be found in **Appendix D**.

Workforce Supply Challenges and Opportunities

There are many challenges facing manufacturing-related sectors in terms of the workforce:

- Declining employment in process manufacturing-related industries and occupations is likely to lead to job losses and a need for re-training and up-skilling amongst affected workers
- The impact of automation, robotics and digitalisation on employment is predicted to be significant across all industries, and even more so in the manufacturing industry, and will require many workers to switch occupations, to develop new skills and capabilities that enable them to adapt to the rise of more sophisticated machines, and to develop skills in areas that are difficult to automate (such as social and emotional skills, creativity and higher-level cognitive capabilities)[15]
- The loss of the automotive industry in Australia will potentially impact upon the availability of skilled labour for the recreational vehicle sector.

At the same time, there are also a number of opportunities:

- Changes in technology and increasing use of automation and robotics also provide opportunities for new and/or increased employment in design, operating and maintaining equipment, scheduling and supervising automated/ robotic processes and quality assurance roles
- The growth in the RV sector may provide opportunities for workers displaced by the decline of the automotive industry, as well as for attracting women into this male-dominated sector
- The predicted upturn in the surface preparation and coating sector may see an increase in the demand for skilled labour. It is interesting to note that there are currently no providers registered to deliver the surface preparation and coating qualification in QLD, despite a higher concentration of businesses in this sector located in the state. This may impact on the availability of skilled labour in the state.

15 McKinsey and Company, 2017, Jobs Lost, Jobs Gained: Workforce transitions in a time of automation. Available online at https://www.mckinsey.com/global-themes/future-of-organizations-and-work/what-the-future-of-work-will-mean-for-jobs-skills-and-wages

Skills Outlook

There are three main drivers identified in the challenges and opportunities outlined above, which may impact upon skill needs in the MSM Manufacturing Training Package industry sectors.

The first is a current need in the recreation vehicle area for improved skills in aspects of business management, including skills such as:

- Basic business management
- Small business marketing
- Customer service/Sales training
- Online and social media marketing.

The second is that the introduction of the new Road Vehicle Standards Act (RVSA) in 2018 may increase the need for businesses and employees in the recreational vehicle sector to improve the skills and knowledge needed for compliance with the new legislation.

The third is an emerging requirement for skills needed to respond to changes in technology. In the process manufacturing and surface preparation and coating sectors these skills will be related to automation and robotics, while in the recreational vehicles sector it will be related to the adoption of new technology into design and retailing of products, and the ability to service and repair more highly sophisticated products.

As with all industry sectors, there is also an increasing demand for generic skills to complement and support industry-specific technical skills and knowledge.

IRC members have ranked the importance of key generic workforce skills as indicated in Table 4 below. In several cases, there were only particular aspects of the generic skill area that were seen as important and these have been highlighted within the text in the table.

IRC members observed that although they would expect that learners would already possess the necessary underpinning Language, Literacy and Numeracy (LLN) and Science, Technology, Engineering and Mathematics (STEM) skills when enrolling in qualifications, this is often not the case. As a consequence, it is important that qualifications specify the required underpinning skills within the standards.

It was also suggested that workplace health and safety should be added to the list of generic skills, as its high level of importance is evident across all of the industry sectors under the remit of this IRC.

Customer service skills are important for sectors that include retail businesses, such as the Recreational Vehicles sector. However, the IRC commented that 'customer' can also be defined as the next person on the production line, and that getting the 'product' to this person is critical in the manufacturing process. Similarly, customers can also be defined as different organisations within the supply chain.

Table 4 - Key Generic Workforce Skills

	Combined Manufacturing IRCs		Process Manufacturing, Recreational Vehicle and Laboratory IRC
1	Design mindset/Thinking critically/Systems thinking/Solving problems skills	1	Technology use and application
2	Technology use and application skills	2	Design mindset/Thinking critically/Systems thinking/**Solving problems**
3	Learning agility/Information literacy/Intellectual autonomy and self-management skills	3	Managerial/**Leadership**
4	Communication/Collaborations including virtual collaboration/Social intelligence skills	4	Language, Literacy and Numeracy (LLN)
5	Science, Technology, Engineering and Mathematics (STEM) skills	5	Science, Technology, Engineering and Mathematics (STEM)
6	Language, Literacy and Numeracy (LLN) skills	6	**Learning agility**/Information literacy/**Intellectual autonomy and self-management**
7	Data analysis skills	7	**Customer service**/Marketing
8	Managerial/Leadership skills	8	**Communication**/Collaboration inc. Virtual collaboration/Social intelligence
9	Customer service/Marketing skills	9	Data analysis
10	Environmental and Sustainability skills	10	Environmental and Sustainability
11	Entrepreneurial skills	11	Financial
12	Financial skills	12	Entrepreneurial

Key Drivers for Change and Proposed Responses

The challenges and opportunities and the employment and skills outlook described in this report indicate the need for skill development solutions in a number of priority areas. These are outlined in table 5 below.

Table 5 - Priority skills and key drivers for change

Priority Skills	Key Driver for Change	Proposed Response
Regulatory/Legislative		
Product safety	Likely passing of the Road Vehicle Standards Act in mid-2018	Review current recreational vehicle qualifications to identify any impacts of legislation
Industry Specific		
Process manufacturing specialisations	It is unclear to employers what skills and knowledge to expect from individuals with a process manufacturing qualification	Review current units of competency across the process manufacturing qualifications and consider the introduction of specialisations
Business skills		
Business skills	Lack of business management capability within the recreational vehicles sector	Consider the inclusion of options for business skills development within recreational vehicles qualifications
Technology		
Changing skill needs arising from automation and robotics	Increasing levels of automation, digitalisation and robotics in the manufacturing industry	Investigate the impact of automation, digitalisation and robotics on process manufacturing and surface preparation and coating occupations and determine the implications for skill development
Changing skill needs arising from new technology	Increasing demand to incorporate new technologies into recreational vehicle products	Investigate the impact of new technology on recreational vehicle manufacture, service/repair and sales and determine the implications for skill development

Training Product Review - Current Activities

2017-18 Activities

In February 2017, IBSA Manufacturing was commissioned to undertake training package development work on behalf of the Process Manufacturing, Recreational Vehicle and Laboratory IRC on the MSM Manufacturing Training Package.

The project involves the development of a new qualification in fenestration, proposed at Certificate III level, and a skill set. This project is in response to increased demand in the window and door manufacturing sector which has resulted in significant investment into facilities and equipment by industry. The lack of a suitable qualification has led to a shortage of trained fabricators in the window and door industry.

There are close synergies with the review of Glass and Glazing units in the Furnishing Training Package as some of the prospective units of competency may be included in a fenestration qualification. Timelines for both projects have been aligned to maximise efficiencies. Preliminary feedback on training package and development review work suggests a skill set may not be required.

This work strongly supports the CISC-AISC priorities by using units that can be used by multiple industry sectors, and ensuring the training system better supports individuals to move easily from one related occupation to another.

This project is due to be submitted to the AISC in September 2018.

AISC Cross-Sector Projects

The AISC identified a number of emerging cross-sectoral themes in previous IRC skills forecasts. The AISC sought to strategically address these common skills issues and commissioned nine cross-sector projects. The aim of the projects is to address changing skills needs across industries in a coordinated and efficient way and, where opportunities exist, to create flexible and transferable training package components that will benefit industry, learners and the broader VET sector.

There are a number of cross-sector projects that will potentially directly impact upon the MSM Manufacturing Training Package.

- The **Digital Skills** Cross-Sector Project, initially focused on the need for coding skills in manufacturing and related training packages, was subsequently expanded to focus on a broader set of skills related to coding and programming, CAD/CAM/CAE, and additive manufacturing/3D printing, as well as the digital analytical/diagnostic skills needed to analyse and respond to data provided by machines in the workplace. Outcomes of the project may result in recommendations for updated content for at least one unit of competency in the MSM Manufacturing Training Package.
- The **Environmental Sustainability** Cross-Sector Project focused on identifying environmental sustainability skills that are shared by multiple industry sectors and recommend training package developments and modifications that will enable the use of training products across multiple industries, thus reducing duplication and enhancing skill transferability. Outcomes of the project may result in recommendations for two units of competency from the MSM Manufacturing Training Package to be reviewed, with potential for replacement by a cross-industry unit.
- The **Teamwork and Communication** Cross-Sector Project is proposing to develop five new units of competency that might be able to be used across all training packages and could potentially be used to replace two units of competency from the MSM Manufacturing Training Package.

Training Product Review – Priorities 2018-2022

Following consideration and analysis of the industry challenges and opportunities, current and emerging skills needs and the key drivers for change, the Process Manufacturing, Recreational Vehicle and Laboratory IRC have identified a number of areas for training product development. These training priorities are outlined in the IRC Skills Forecast and Proposed Schedule Work 2018-19 to 2021-22 table which lists the priorities for the next four years. This table also provides a rationale for the priorities, proposed scope and timeframes for these activities.

Items Identified as Important and to be Included in the Priorities for 2018-19

There are no items that have been identified as priorities for the 2018-2019 schedule of work.

Items Identified as Priorities Over the Next Three Years

The IRC identified the following training priorities to be considered over the next three years.

- **Recreational Vehicles**: Review all recreational vehicle qualifications and update if needed to reflect requirements of the new Road Vehicle Standards Act, to ensure currency in relation to any new trends and changes in practice in the sector and to consider whether there is a need for inclusion of business skills within recreational vehicle qualifications.
- **Process Manufacturing**: Review the current units of competency within MSM Manufacturing process manufacturing qualifications for currency and relevance and consider the introduction of specialisations.

Future Priorities 2023 Onwards

In their analysis of the industry challenges and opportunities, current and emerging skills needs and the key drivers for change, the PMRVL IRC identified the following areas for future training product development:

- The impact of automation, digitalisation and robotics on the process manufacturing and surface preparation and coating sector, and implications for training package development
- The impact of changing technology on the recreational vehicle sector, and implications for training package development.

Proposed Schedule of Work 2018-19 to 2021-22

Process Manufacturing, Recreational Vehicle and Laboratory Industry Reference Committee

MSM Manufacturing Training Package

Contact details: Keith Monaghan,IRC Chair

Date submitted to Department of Education and Training: 27 April 2018

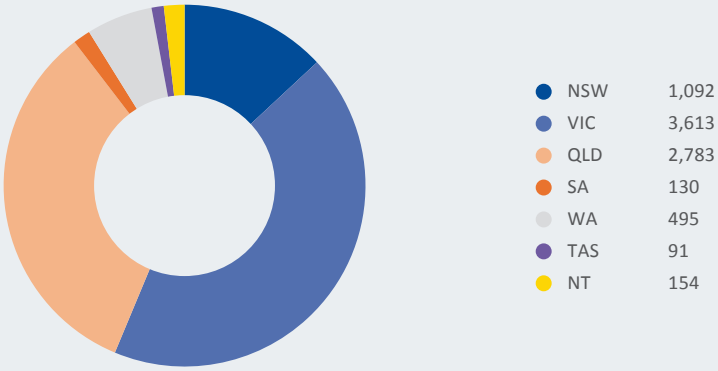
Year	Items to be included in National Schedule of work
2019-2020	**Recreational Vehicles** Review all recreational vehicle qualifications and update if needed to reflect requirements of the new Road Vehicle Standards Act, to ensure currency in relation to any new trends and changes in practice in the sector and to consider whether there is a need for inclusion of business skills within recreational vehicle qualifications. **Rationale** The new Road Vehicle Standards Act, which is due to be passed in 2018, may have implications for the Recreational Vehicles Qualifications (see discussion under Challenges and Opportunities). At the same time, changes in automation, digitalisation and robotics, as well as the introduction of new technology is impacting on RV manufacturing and repair processes (see discussion on p15). Also, a lack of business skills amongst the predominantly small and micro businesses that make up the RV sector may indicate a need for new or imported units to be added to the RV qualifications (see discussion under Skills Outlook). **Training products impacted:** • MSM21115 Certificate II in Recreational Vehicle Manufacturing • MSM21015 Certificate II in Recreational Vehicle Service and Repair • MSM31215 Certificate III in Recreational Vehicle and Accessories Retailing • MSM31115 Certificate III in Recreational Vehicle Manufacturing • MSM31015 Certificate III in Recreational Vehicle Service and Repair • MSM41115 Certificate IV in Recreational Vehicle and Accessories Retailing • MSM41015 Certificate IV in Recreational Vehicles • MSM51015 Diploma of Recreational Vehicles

Year	Items to be included in National Schedule of work
2020-2021	**Process Manufacturing** Review the current units of competency within MSM Manufacturing process manufacturing qualifications for currency and relevance and consider the introduction of specialisations. **Rationale** Declining enrolments in the MSM Manufacturing process manufacturing qualifications and confusion amongst employers about the skills covered by these generic qualifications suggest that they need to be revised for relevance and currency (see discussion under Training Snapshot). **Training products impacted:** • MSM10116 Certificate I in Process Manufacturing • MSM20116 Certificate II in Process Manufacturing • MSM30116 Certificate III in Process Manufacturing • MSM40116 Certificate IV in Process Manufacturing.

Appendix A: Training Package Enrolment Snapshot

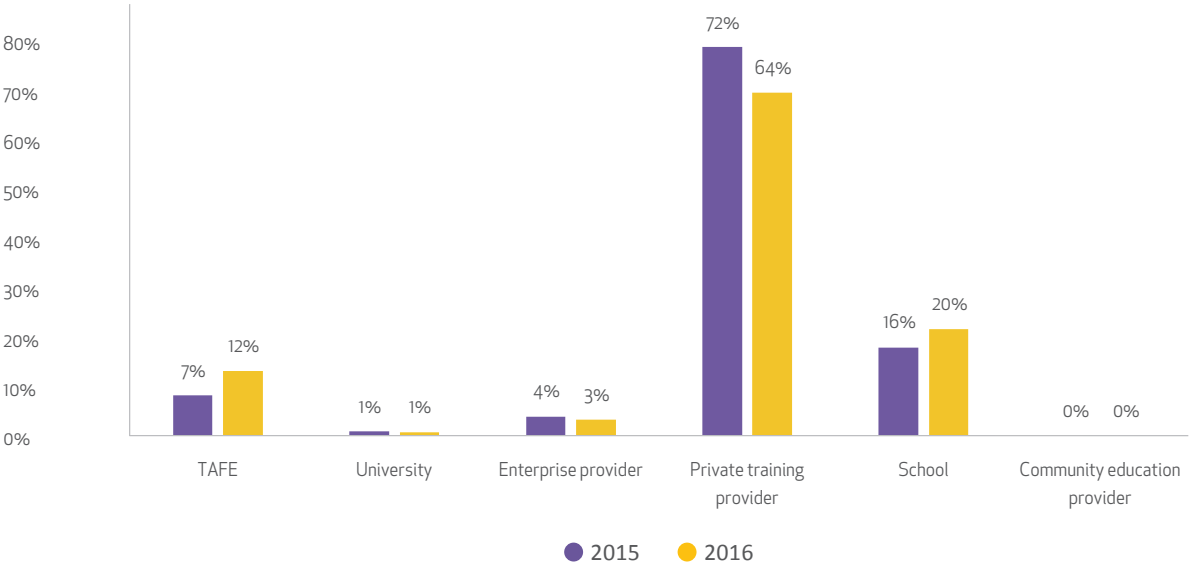
Program enrolments in MSM Manufacturing qualifications by State/Territory of student residence

2016 Total VET Activity



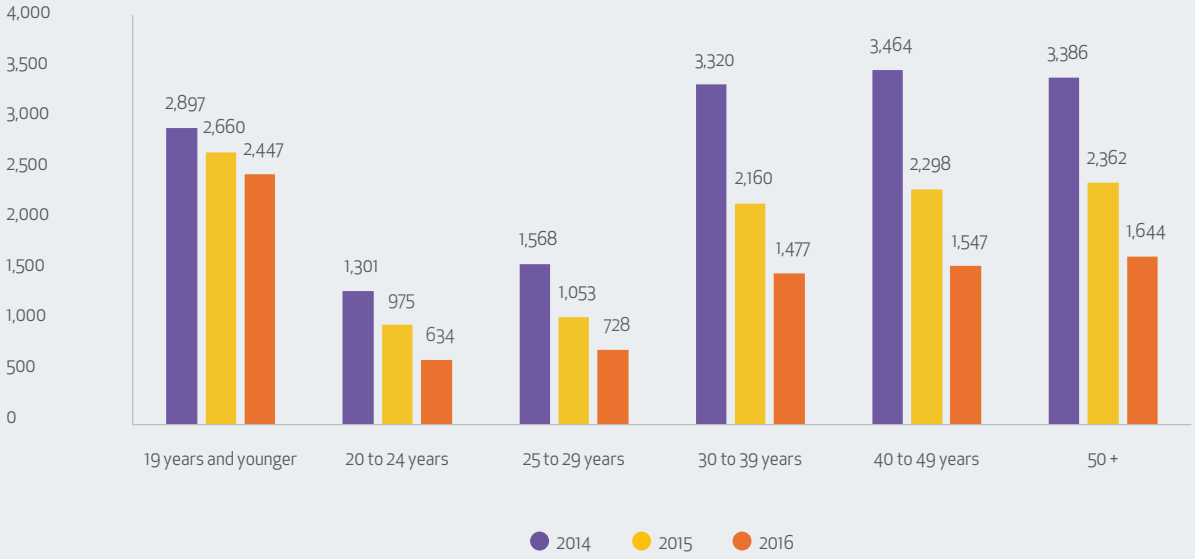
Program enrolments in MSM Manufacturing qualifications by Training Organisation Type

Percentage of 2015 - 2016 Total VET Activity



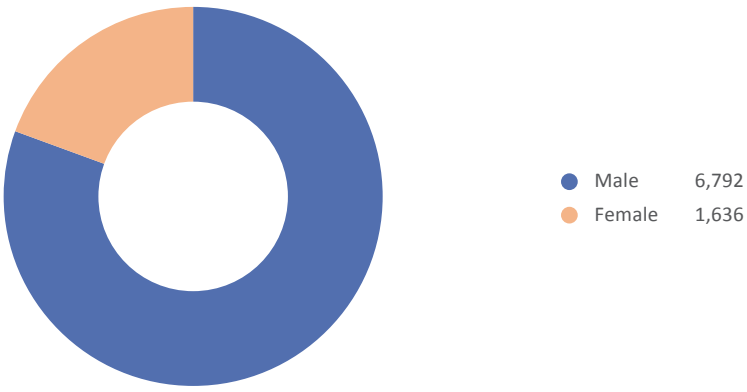
Program enrolments in MSM Manufacturing qualifications by Age Group

2014 - 2016 Total VET Activity



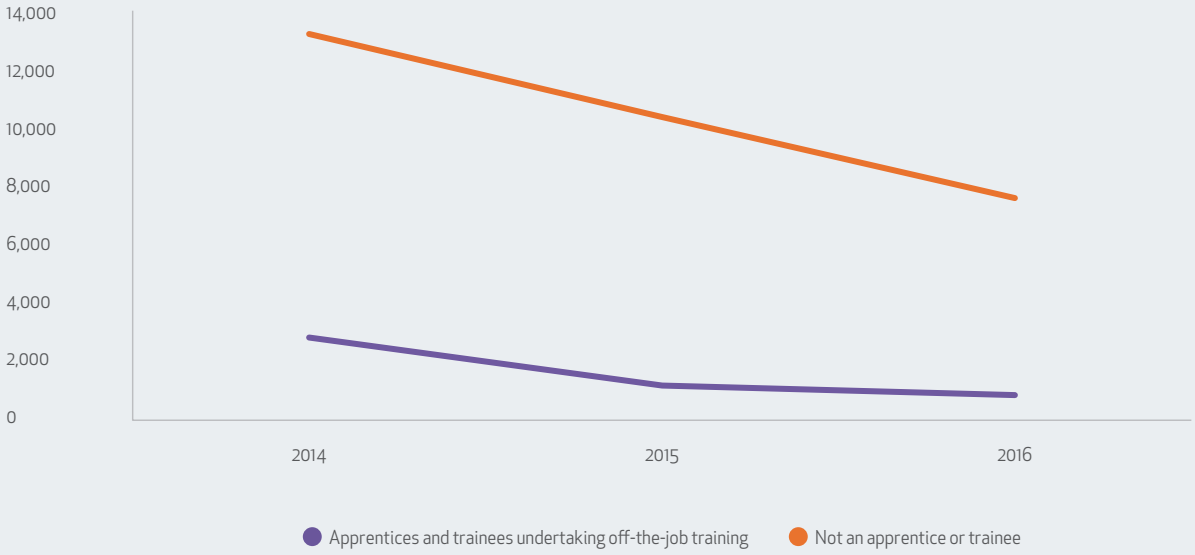
Program enrolments in MSM Manufacturing qualifications by Sex

2016 Total VET Activity



Program enrolments in MSM Manufacturing qualifications by Apprentice/Trainee undertaking off-the-job training

Total VET Activity 2014-2016



Program enrolments by qualification level in MSM Manufacturing qualifications

2014 - 2016 Total VET Activity

All data in this Appendix is sourced from the VOCSTATS VET Provider Collection. 2016 Government Funded and Total VET Activity Program enrolments extracted September 2017

VOCSATATS data are 'randomly' adjusted by small amounts by a data perturbation tool to avoid the release of confidential data. Hence numbers are only approximate. The perturbation impact is negligible for most practical purposes. The effect can be significant and must be considered when interpreting small numbers

Appendix B: Future Skills Outcomes

The Australian Industry and Skills Committee (AISC) commissioned the Future Skills and Training Resource which summarises data on current and future Australian and international megatrends, to support Industry Reference Committees (IRCs) in developing their Industry Skills Forecasts and Proposed Schedules of Work.

The following trends and considerations are based on Process Manufacturing, Recreational Vehicle and Laboratory IRC discussions. This appendix presents the preliminary thinking of IRC members in order to stimulate broad discussion in industry.

Trends

Technology

Technology will have an extreme impact on the Process Manufacturing, Recreational Vehicle and Laboratory sectors and will change the industry sectors as they're currently known, as well as have an effect on learning and creating knowledge.

The key trends affecting the sectors are:

Artificial Intelligence (AI) and Machine Learning: AI technologies are an established trend and have been implemented across the sectors in various ways. A significant challenge is for policy and regulation to keep up with the pace of change and implementation. Industry also needs to be better at promoting the employment and skilling opportunities of technology adoption.

Cross-Disciplinary Science: This is an emerging trend requiring people and teams to have a functional knowledge across a number of disciplines.

Society and Culture

The key trends affecting the Process Manufacturing, Recreational Vehicle and Laboratory sectors are:

Changing Work and Career Values: This is an emerging trend which will become more prevalent in workplaces, particularly with technology expansion and the acceptance of automation. Workers will have the flexibility to undertake roles which interest them, and employers can also benefit from the broader perspectives gained from employees' experience in other areas. However, if workplace changes are imposed on workers, the benefits for individuals are not always positive.

Global (and Social) Mobility: Higher level skills and industry knowledge are leaving Australia to follow industry jobs moving offshore. Lower level, technical skills are required and increasingly filled by migrants, and this poses language, literacy and numeracy challenges to workplaces. Social mobility, fuelled by social media and the internet, is having a significant impact on the industry, particularly on how people are learning, and on their career and work choices.

Political and Institutional

The Process Manufacturing, Recreational Vehicle and Laboratory sectors operate in highly regulated environments, with workplaces required to adhere to stringent workplace, health and safety requirements and many workers requiring licences to undertake their job roles.

The key trends affecting the sectors are:

Political Instability and Polarisation / Political Appetite for Reform: Frequent changes in governments impact the implementation of reform agendas that are important for industry sustainability.

Governments also need to ensure funding for training is funnelled to the right skill areas so that workers can access training, particularly to meet regulatory requirements.

Resources and Environment

The key trend affecting the Process Manufacturing, Recreational Vehicle and Laboratory sectors is:

International Sustainability Action: International regulations are emerging as a key driver of change, with Australia looking to harmonise to international standards, such as those around emission targets.

More generally, resources are more widely understood and accepted as finite challenges faced by the industry, related to disposal of process waste, cost of energy use and access to ICT-related infrastructure. Younger generations are also more concerned about environmental issues, leading business and society to give more value to sustainability and the environment.

Business and Economics

The key trends affecting the Process Manufacturing, Recreational Vehicle and Laboratory sectors are:

Empowered (Informed and Demanding) Customers: Business is guided by social and cultural dynamics. Changes in consumer demands are being driven by social media movements, which will impact not only product design, but also job design.

Changing Workplace Dynamics: There is an emerging trend with teams becoming increasingly fluid in terms of sizes, interactions and tasks. The relational aspect of working together will matter more than technical aspects. A tension exists between the drive toward innovation and the need for standardisation in the manufacturing environment. 'Structured flexibility' will become prevalent in the industry.

Start Up Thinking: Australian manufacturers have a 'can do' attitude and are innovators, often requiring 'outside the box' solutions, but current systems do not always support this. Hyper-competition is driving faster product development and business cycles. Innovation is sometimes hampered by bureaucracy as well as management within organisations. Employees need to be provided with conscious opportunities to innovate, generate ideas and test designs in supportive environments.

Access to Quality Internet: This is an important requirement for every business, particularly as workforces are increasingly spread across different geographical locations.

Financial Viability: While impacted by access to and cost of resources, the key challenge for businesses in the industry sectors is to remain financially viable in order to stay competitive and continue to employ and train people.

Considerations for Training

Employers / Industry

Skills mismatch is a huge problem, and industries are running their own workshops and campaigns to attract industry entrants. However, the gap is too large for industry to address alone.

SMEs' engagement with workforce development and training remains a challenge due to market pressures.

The VET system must become more flexible to respond to industry needs, otherwise industry will go around the system.

Learners / Workers

The flexibility that now exists in mobility, social media, and connectivity needs to translate to new training models and approaches. Flexibility and higher order 'soft skills' are essential attributes now and in the future.

Learners and workers will seek to demonstrate to employers their capacity to think, try new things, and take risks. These abilities will need to be part of the training approach.

Learners and workers will combine VET and higher education alongside independent learning to gain employment or pursue entrepreneurial paths.

Government

Regulation will be a pivotal challenge to technology adoption and filling of skills gaps. Ways of evaluating progress, impact and achievement need to be reviewed.

Government involvement in all areas and aspects of the VET system will need to continue. The barriers in relation to industry having and accessing appropriate training to meet their needs requires management. This includes ensuring national and state funding skills lists accurately represent industry demand and that appropriate funding mechanisms, which reduce the cost burden on learners, are in place to enable training for these key skills.

Industry needs an active role in VET to ensure system-wide engagement.

Education and Training

Inflexibility in cross-industry training is a key issue to be addressed. Society and industry expect the VET system to focus more on industry value chains and lifecycles, and align training with new/expanding industries.

Educators' and trainers' roles are under pressure to be reconceptualised. Greater industry demand for skill sets and 'just in time' learning means these are increasingly used instead of the traditional training package model. Full qualifications as we know them have reduced relevance for employers and employees; continued support for a skills-driven training model is evident.

Registered training organisations are also impacted by financial viability and are grappling with how to deliver flexible, customised training at competitive rates to industry.

Appendix C: Occupation classifications

For the purposes of analysing employment trends, the following ANZSCO occupation classifications have been used.

ANZSCO Code 4-digit classification	ANZSCO Code 6-digit classification	Related MSM Manufacturing Training Package qualifications
8392 Plastics and Rubber Factory Workers	839200 Plastics and Rubber Factory Workers	Certificate I in Process Manufacturing
8399 Other Factory Process Workers	839999 Factory Process Workers - Not elsewhere classified	Certificate I in Manufacturing (Pathways) Certificate II in Manufacturing Technology Certificate IV in Process Manufacturing
8399 Other Factory Process Workers	839912 Chemical Plant Worker	Certificate II in Process Manufacturing
8999 Other Miscellaneous Labourers	899916 Mechanic's Assistant	Certificate II in Recreational Vehicle Service and Repair
8322 Product Assemblers	832211 Product Assembler	Certificate II in Recreational Vehicle Manufacturing
8390 Miscellaneous Factory Process Workers	839000 Miscellaneous Factory Process Workers	Certificate III in Process Manufacturing
3222 Sheetmetal Trades Workers	322211 Sheetmetal Trades Worker	Certificate III in Surface Preparation and Coating Application
3212 Motor Mechanics	321211 Motor Mechanic (General)	Certificate III in Recreational Vehicle Service and Repair
3242 Vehicle Body Builders and Trimmers	324211 Vehicle Body Builder	Certificate III in Recreational Vehicle Manufacturing Certificate IV in Recreational Vehicles
6213 Motor Vehicle and Vehicle Parts Salespersons	621311 Motor Vehicle or Caravan Salesperson	Certificate III in Recreational Vehicle and Accessories Retailing Certificate IV in Recreational Vehicle and Accessories Retailing
1335 Production Managers	133512 Production Manager (Manufacturing)	Diploma of Production Management Diploma of Recreational Vehicles

Source: ANZSCO: Australian and New Zealand Standard Classification of Occupations, 2013 Version 1.2 is available from the Australian Bureau of Statistics (ABS) website http://www.abs.gov.au/

Appendix D: Industry classifications

For the purposes of analysing the business landscape, the following ANZSIC industry classifications have been used.

ANZSIC Code	ANZSIC Name	Related MSM Manufacturing Training Package areas
17	Petroleum and Coal Product Manufacturing	Process Manufacturing
18	Basic Chemical and Chemical Product Manufacturing	Process Manufacturing
19	Polymer Product and Rubber Product Manufacturing	Process Manufacturing
20	Non-Metallic Mineral Product Manufacturing	Process Manufacturing
229	Other Fabricated Metal Product Manufacturing	Surface Preparation and Coating
2293	Coating and Finishing	
231	Motor Vehicle and Motor Vehicle Part Manufacturing	Recreational Vehicles
391	Motor Vehicle Retailing	Recreational Vehicles
3913	Trailer and Other Motor Vehicle Retailing	
392	Motor Vehicle Parts and Tyre Retailing	Recreational Vehicles
3921	Motor Vehicle Parts Retailing	
941	Automotive Repair and Maintenance	Recreational Vehicles

Source: ANZSIC: Australian and New Zealand Standard Industrial Classification (ANZSIC), 2006 (Revision 2) is available from the Australian Bureau of Statistics (ABS) website http://www.abs.gov.au/