Industry Skills Forecast and Proposed Schedule of Work

Draft for consultation

Printing and Graphic Arts

February 2019

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Executive summary

The Printing and Graphic Arts sector produces a variety of paper, publishing and graphic media and provides related professional advice. There are over 6,500 businesses operating across the printing, printing support services and packaging services industries in Australia,[1] and almost 27,000 people employed in related occupations.[2]

The sector is currently experiencing a decline in demand for some products, such as print newspapers and magazines.[3] However, demand for other products is growing, including printed consumer advertising,[4] packaging and labelling,[5] and consumer books.[6]

The technology and processes the sector uses are also changing. The share of digitally printed products continues to grow,[7] leaving the previously dominant offset lithographic printing declining in value.[8] Additionally, variable data printing technology has allowed businesses to be able to send more targeted and customised marketing material to individual customers, for example, on the basis of demographics or observed preferences.[9] The evolving use of 3D printing also offers opportunity for the sector and the economy as a whole.[10]

The Printing and Graphic Arts Industry Reference Committee (IRC) and PwC's Skills for Australia work to ensure in the competency standards within the ICP Training Package are fit for purpose and serve the sector's needs. The projects currently underway within the ICP Training Package regard the training around printing industry operations and print preparation, as well as print and post-press technical units. Given that this scope of ongoing work means all elements of the Training Package will be reviewed between 2016-17 and 2019-20, there is no identified need for further work and this Industry Skills Forecast and Proposed Schedule of Work does not propose any further projects.

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Skills forecast

1   Sector overview

1.1   The sector at a glance

The Printing and Graphic Arts sector provides visual communication through a variety of paper, publishing and graphic media. This can take the form of information media such as books, magazines, newspapers, as well as advertising materials, packaging and labelling and consumer products.

The sector, as defined by the job roles served by the Printing and Graphic Arts (ICP) Training Package, is a relatively defined workforce. This is in contrast to other sectors served by a single Vocational Education and Training (VET) Training Package which can have many sub-sectors. Largely, the Printing and Graphic Arts sector is a small set of occupations including printer, printing assistant and pre-press graphic artist. Job roles in the sector may be specialised to a kind of printing (such as flexographic, lithographic, wide format, sheet fed or screen printing), but still fall in the same Printing and Graphic Arts sector of creating printed products for clients.

Evidence from Industry Review Committee (IRC) members and consultations continues to suggest that Printing and Graphic Arts workers are increasingly working within multidisciplinary communications teams. In these teams, job roles include a broad range of activities ranging from developing marketing strategies, designing marketing materials for print and online distribution, as well as working closely with individuals from other related fields such as information technology and advertising.

While there are businesses across Australia that focus specifically on providing products and services in the Printing and Graphic Arts sector, the increasingly multidisciplinary nature of roles means that many businesses, across a wide range of industries, employ individuals with printing and/or graphic arts skills and qualifications. While this may appear as a disruption to sector activity, it does not necessarily mean a change or decline in Printing and Graphic Arts job roles, as workers brought in-house into non-printing businesses will likely still use the skills that could be contained in the ICP Training Package.

However, using the limited data available, the magnitude of the sector can be illustrated by the volume and characteristics of the businesses in the core sector. For example, at the end of 2016-17, there were over 6,500 businesses operating across the printing, printing support services and packaging services industries, with the majority (77 per cent) in the printing industry.[11] Most of these businesses were small to medium enterprises, with 51 per cent having 1 to 19 employees. Most printing and packaging services businesses operated in New South Wales (35 per cent), Victoria (30 per cent) and Queensland (17 per cent).

1.2   Training Package at a glance

1.2.1   Training Package description and use

Of the estimated 4.2 million VET learners enrolled in 2017, over 1,800 were enrolled in the ICP Training Package across eight qualifications, down 7.5 per cent from 2016.[12] Enrolments in six of the eight qualifications in the ICP Training Package in 2016 and 2017 are detailed in **Error! Reference source not found.**, excluding Certificate IV in ePublishing and Certificate IV in Printing and Graphic Arts (Mailhouse) where there is limited enrolment data. It should be noted that all the qualifications below will be reviewed and updated as part of the 2019 project work.

The low enrolments for Certificate IV in Printing and Graphic Arts could be attributed to the fact that it is only available in Victoria and Western Australia.[13] The 2016 enrolments at the Certificate III level represent enrolments in superseded qualifications that are falling over time as those older qualifications are phased out.
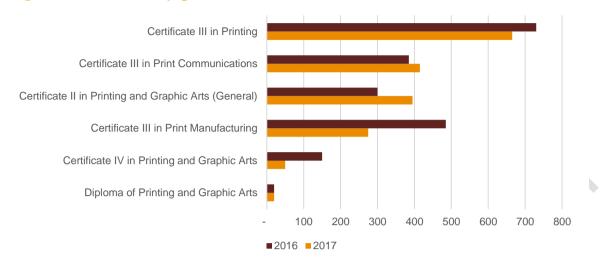
Figure 1: Enrolments by qualification in 2016 and 2017

1.2.2 Challenges and opportunities with the Training Package

Key challenges for the Training Package include:

- **Misguided public perceptions of job roles in the sector.** Consultation suggests an ongoing challenge for the Printing and Graphic Arts sector is attracting new learners. This is largely driven by low amount of public awareness of what printers actually do and what broader service offerings the Printing and Graphic Arts sector provides.[14] Moreover, the Printing and Graphic Arts IRC suggests that the sector is often misunderstood by potential workers and careers advisors who may discourage learners from engaging in training in the sector due to perceived mediocre employment outlooks.[15]

- **An older workforce.** Anecdotal evidence from IRC members and consultation has indicated that the Printing and Graphic Arts workforce is older, and has been relatively static for the working life of the current cohort. The average worker in the sector is older than the average age across all occupations[16] and in many cases has less desire to up-skill or progress, and would prefer to stay in a steady position. Although it is recognised that this is not the case for all workers, this workforce demographic presents a challenge as it does not makes it easy for workers to progress upwards or across organisations, nor does it create space for new workers and learners to enter. However, as these workers are being to age out of the workforce, this will create job openings across the sector (even if total numbers of people employed does not change) This can be seen through the job openings in the sector.[17]

However, there is an opportunity for the Training Package if positive visibility of the sector is able to build if greater public awareness of the innovations in the sector (set out in Section 3). This could diversify the current workforce and attract younger people into training and employment in the sector.[18]

1.2.3 Training Package collaboration opportunities

Many of the skills most valued by industry are relevant across multiple sectors of Australia's economy. The Australian Industry and Skills Committee (AISC) has identified a number of cross sector skill projects to ensure that training package components are developed to recognise the importance of skills in multiple sectors and are used to their full potential in different industry contexts. These are areas where opportunities exist to create flexible and transferable training package components that will benefit the broader VET sector as well as workers and learners from across multiple sectors of the economy.

Of particular relevance to Printing and Graphic Arts are the following projects:

- **Automation** will be important for the sector, and related skills will specifically be required with the efficiency of workflow automation.

- **Consumer engagement through online and social media** will be important skills for Printing and Graphic Arts workers particularly with the shift toward a greater customer focus within the printing industry and the impact of digital on marketing and advertising, which is impacting on the skills needs of individuals.

- **Digital skills** is relevant to all parts of the Printing and Graphic Arts sector, particularly in skills around digital printing, 3D printing, online newspapers, digital advertising, and multi-channel marketing.

- **Environmental sustainability** will be important skills for workers as the sector continues to advance processes around disposal of waste and environmental hazards.

- **Teamwork and communication** are increasingly essential skills for Printing and Graphic Arts workers. The ability to collaborate and work as part of a team is required within organisations in order to understand the more diversified business in which they sit.

The Printing and Graphic Arts IRC will continue to seek areas and opportunities for collaboration across sectors. For example, design skills in the Creative Arts and Culture Training Package, and new technology skills in the Information and Communication Technology Training Package will be particularly relevant to this sector.

2 *Employment and skills outlook*

2.1 *Employment outlook*

As set out above, workers in the Printing and Graphic Arts sector may work in a variety of organisations and diverse teams. Although this diversity may make it difficult to accurately measure the sector, it presents a range of opportunities. For example, outside of employment in more traditional printing organisations, there are opportunities for printing job roles in integrated entities which both publish and print media and employment in upstream services which relate to print but are not directly part of the printing process, such as e-publishing, developing marketing strategies, graphic design or advice on how to effectively run a print advertising campaign. Furthermore, technological disruption enables businesses to become more innovative in the way they operate and deliver services. As certain areas in print decline (for example, offset) and others grow (for example inkjet and digital, packaging, signage), the sector has more job openings in areas such as on demand printing, digital packaging applications, display boards and materials, and localised custom web printing.[19]

These opportunities for adaptation and expansion in the sector (explored further in section 3), are difficult to capture in available data and makes it hard to present a full view of future employment in this sector.

Additionally, a simple forecast, such as shown below, does not capture the nuance that there is an opportunity for new workers to move in to the sector, even if total employment is reduced. This is because the sector has an ageing workforce and it is expected that new job roles will open up in the next five years as people retire from the industry.[20] The average age of workers in the sector is between 42 to 46 years old,[21] which is older than the average age across all occupations (40 years).[22]

Figure 2 below shows both current and projected employment data for these indicative printing occupations at a four-digit level ANZSCO occupation level.[23]

Figure 2: Projected employment levels for Printing and Graphic Arts occupations

	Projected employment in May 2023 ('000)	Projected employment change from May 2018 ('000)	
Printers	10.96	(0.92)	-8%
Paper and Wood Processing Machine Operators	5.41	(0.51)	-9%
Print Finishers and Screen Printers	3.12	(0.48)	-13%
Graphic pre-press Trades Workers	2.66	(0.30)	-10%
Printing Assistants and Table Workers	2.01	(0.23)	-10%

Source: Department of Jobs and Small Business (2018) *2018 Occupational Projections – five years to May 2023*
Note: Paper and Wood Processing Machine Operators are included in these job roles and do involve the operation of machinery used in production of printed paper packaging. However, it also includes those people involved in the manufacture of logs, plywood, solid laminates and similar timber products. As such, a large proportion of employment in this occupational group is unrelated to the Printing and Graphic Arts sector.

Overall, this forecast shows declining levels of employment across the listed occupations. The factors contributing to this projected employment outlook are as follows:

- **Ongoing technological improvements and changes in the print technology mix.** As print technology improves, it is likely that fewer workers will be required to produce the same quantity of output. Therefore, the number of workers directly involved in the printing process is likely to be heavily dependent upon technical advancements in print machinery and software as well as the uptake of this technology by the sector.[24] For example, digital printing typically requires fewer staff than offset printing due to the higher number of processes involved in offset printing.[25]

- **Transition in job roles.** Part of the difficulty in producing accurate employment projections is the changing job roles of those involved in the Printing and Graphic Arts sector.[26] Changing job roles may cause workers to shift out of listed key occupations and therefore show a decline in employment. For example, a printer who moves towards more of a sales or marketing role would not be captured within the key occupations.

- **The shift towards non-traditional service offerings and new product segments**. The Printing and Graphic Arts sector is continuing to experience change, shifting towards services and products not traditionally offered by the Printing and Printing Support Services industry. An example is the increase of on-demand printing of customised goods as part of multimedia marketing campaigns. As this shift continues, it is likely that fewer employees will be captured in the statistical definition of occupations traditionally employed in those businesses.

Additionally, there is a movement of printing and design services in-house, as opposed to contracting outside printing businesses, largely been driven by improved quality and reduced costs of small in-house print running.[27] While this may appear as a disruption in sector activity, it does not necessarily mean a decline in Printing and Graphic Arts job roles. Workers brought in-house into non-printing businesses will likely still use the skills that could be contained in the ICP Training Package. It should be noted that this could be reflected as decline in employment as these workers may not be captured in statistical definitions, although they may still be in core Printing and Graphic Arts job roles.

2.2 Skills outlook

2.2.1 Current and emerging skills needs

In general, a Printing and Graphic Arts sector worker will need two specific sets of skills:

- **Technical skills**, which are skills specific to their role in the printing process. For example:

  - **Printers** will need skills including those that allow them to produce and manage digital print images; check print quality standards against proofs; undertake maintenance, adjustment, repair and cleaning of machines; set, adjust and monitor substrate-feed mechanisms, delivery mechanisms, inking systems and other printing machine functions; and mix ink and solvents.[28]

  - **3D printers** will need skills including those that allow them to manipulate 3D files in preparation for 3D printing; set up and produce 3D prints and scans; and apply problem solving techniques to 3D printing maintenance and operation.[29]

  - **Printing assistants** will need skills include those that allow them to set up, operate and adjust machines; maintain and lubricate printing and bindery machines; fold, collate and fasten printed products by machine and hand; produce graphics using a graphics application; apply various digital printing processes; operate specialised machines such as casing-in and mini binders, and automatic carton folding and gluing machines; and enter, retrieve and prepare data for personalised printing by integrating a database with a layout.[30]

  - **Graphic pre-press workers** will need skills including those that allow them to use computer software programs to generate images, text and layouts and to perform colour

separation, correction and design; operate plate equipment; carry out digital proofing; and evaluate proofs.[31]

- o **Binders, finishers and screen printers** will need skills including those to operate automatic binding and finishing equipment; operate manual and program electronic guillotines for paper cutting and trimming; prepare stencils using digital and hand-cut methods; select, mix and match coloured inks; and load screen printing presses.[32]

- **Transferable enterprise skills**, such as managing, delivering and monitoring quality customer service; teamwork; communication; critical and creative problem solving skills, and work health and safety skills that are about 'how' a worker operates in the workplace and are transferable across roles.[33] The IRC has noted that within these skills, customer service is of particular importance for workers in the sector, as it is a key way that businesses differentiate themselves.

Due to consistent change and evolution of technology in the sector (covered in more detail in Section 3 below), the technical skills required to keep pace will be a key focus for the sector. These technical skills will be a core part of ongoing work on the Training Package and PwC's Skills for Australia and the Printing and Graphic Arts IRC intend to continue to consult with industry to understand emerging skills.

2.2.2 *Key generic skills*

The IRC is required to rank a supplied list of 12 generic workforce skills in order of importance to relevant employers, shown in Table 1. All the skills listed are important. A low ranking does not imply low usefulness or importance, but rather only indicates that these skills are not critical priorities for the Printing and Graphic Arts sector. Further, this only shows rankings of importance as an average across the whole sector and some skills may have higher or lower importance for particular organisations and particular sub-sectors.

Please note that the Printing and Graphic Arts IRC feel that ranking these generic workforce skills undermines the purpose of the Industry Skills Forecast. The IRC believe that the skills listed are all crucial for individuals who are employed in the Printing and Graphic Arts sector and therefore they are all critical priorities. In addition, the ranking of skills as an average across the sector is flawed due to the diversity of job roles. The IRC concludes that the ranking exercise does a disservice to the importance of these skills, while acknowledging that the exercise is a requirement of the Industry Skills Forecast.

Table 1: Importance of generic workforce skills

Importance (1 is most important and 12 is least important)	Generic workforce skill
1	Learning agility/Information literacy/Intellectual autonomy and self-management
2	Customer service/Marketing
3	Technology use and application
4	Environmental and sustainability
=5	Language, literacy and numeracy (LLN)
=5	Communication/Collaboration including virtual collaboration/Social intelligence
7	Design mindset/Thinking critically/System thinking/Solving problems
8	Data analysis
9	Managerial/Leadership
10	Financial
11	Science, technology, engineering and maths (STEM)
12	Entrepreneurial

Source: Formal activity undertaken by IRC members (2019)
Note: These skills are read in line with definitions provided by the Commonwealth Department of Education and Training.

3 Key drivers for change and proposed responses

3.1 Key drivers for change overview

This overview of key drivers for change in the sector outlines trends that are likely to present changes, opportunities or threats in the medium term. These trends will likely influence movements in the employment landscape (number and nature of jobs available), as well as the skills needed to succeed in those future roles. The drivers outlined below have already been taken into account in the training product development that is already ongoing. For this reason, no further projects are proposed at this time.

3.1.1 Changing market demand

The Printing and Graphic Arts sector is currently in a period of change, with demand for some products it produces being disrupted, while demand for other products is presenting growth opportunities. This is leading to a change in emphasis the sector places on different products.

To understand this change in emphasis, it is important to understand the broader range of visual communication products that the sector creates. This diversity of products includes:

- information media such as books, magazines, newspapers, financial and legal documents

- promotional materials such as catalogues, direct mail, brochures and other collateral

- packaging products such as labels and printed folding, corrugated and flexible cartons

- consumer products such as plastic cards, stationery, signage and manufacturing components

- printed clothing and apparel

- outdoor advertising products such as display banners.

In each of these products, the sector is involved across strategy, design and production. The skills required for people in printing jobs roles will likely differ across these products not just in the strategy and design, as each product will have different intended visual communication purposes, but also because there can be different technical skills to print across this wide variety of substrates (underlying product which is printed on, across papers, cardboards, fabrics, plastics and other materials).

The change in emphasis across these products recognises the disruption in consumer demand for some printed products such print newspapers and magazines,[34] with potential growth areas for other printed products, including those driven by:

- **Printed consumer advertising.** Business demand for printed catalogues and direct mail advertising continues to be strong, with over 90 per cent of retailers listing catalogues as a primary advertising tool.[35] Indeed, the volume of this advertising circulated in 2017-18 grew by 2.8 per cent year-on-year.[36] With retail activity and employment forecast to grow in the medium term, it is expected this will also drive increased catalogue use.[37] A study found that Australians often take action from reading printed catalogues by going into store and making a purchase,[38] and as that Australians are starting to view the materials that arrive in their letterbox as a 'shopping channel'.[39]

- **Packaging.** The packaging industry, which largely relies on label production and printing, is experiencing slight growth. Packaging in Australia grew at an average of 0.6 per cent a year over

the last five years and is forecast to grow an annual average of 2 per cent over the next five years.[40] Over this time industry profitability has also been increasing on top of revenue growth.

- **Food labelling and packaging.** Over the past five years, even as other printing services have slowed, demand for food product printed labelling and packaging have grown as a proportion of revenue.[41] Food and beverage packaging makes up the majority (55 per cent) of the packaging industry above.[42]

- **Consumer books**. Demand for consumer books is expected to increase, with the revenue from printed books forecast to grow steadily at 1 per cent each year from 2018-2022.[43]

- **General business products.** Businesses require a range of printed products such as business cards, brochures, documents, report and signs. Therefore, an increase in the total number of businesses tends to positively affect demand for printing services. As the overall number of businesses in Australia is projected to increase, at least in the short term, this is expected to be a driver of demand in the sector.[44]

- **Events.** The IRC has indicated that printing a variety of products for events in a growth opportunity for the sector. With over 400,000 business events held in Australia each year,[45] this creates demand for a variety of signage and printed products.

This changing market demand shows a change in the specific outputs the sector produces, and therefore a change in emphasis in the technical skills required for Printing and Graphic Arts workers to produce these products on a range on substrates for a wider range of communication purposes.

3.1.2 *Technological change*

Technological change continues to shape the skills and job roles of workers in the Printing and Graphic Arts sector. In particular, industry feedback has suggested four major technological changes are at play, as below.

Shift from offset to digital printing technology

The share of digital print products and services continues to grow in the Printing and Graphic Arts sector.[46] This shift is in turn shaping the nature of employment within the sector. For example, industry consultation suggests a shift towards newer digital printing technologies such as commercial inkjet printing. This is also reflected in student enrolments, with a decrease in enrolments in traditional offset units of competency.[47] Developments in inkjet methods will see the fastest growth in digital processes across 2018-2022 in the global printing industry, leaving the previously dominant offset lithographic printing declining in value.[48]

Moreover, industry feedback suggests the digital shift can result in quicker turnaround times, as print run lengths have decreased considerably. As a result, fewer technical staff are directly involved in the printing process, which leaves a greater proportion of their time available to customer-facing functions. This has also led firms to offer rapid-turnaround printing services, requiring workers to have precise time management and prioritisation skills.

Growth in on-demand printing

Advancements in print technology are changing the structure of the book printing industry. Historically, books could only be produced cost-effectively if thousands of copies were produced. However, newer printing technology has made printing individual books more viable. Printing on-demand allows book retailers and publishers to hold digital copies of all titles and only print books as customer orders are received.[49]

These new service offerings are likely to require workers in the industry to deal increasingly with new types of customers. These may include small niche or technical publishers using print on-demand services and individuals wishing to have their works published.

3D printing

3D printing (also referred to as additive manufacturing) is becoming a major growth area within the global economy, with the market for 3D printing equipment and services estimated to grow to $35.7 billion by 2030.[50]

The applications for 3D printing range across industries and traditional occupation roles. 3D printing draws on digital design, manufacturing, ICT and visual arts skills and has potential implications for all industries, from health to infrastructure to artistic expression. It is expected that applications will continue to be discovered as the technology becomes more widespread, but its potential can be seen in the uses already being explored. Examples include:[51]

- changing the way that new products are designed by significantly reducing development time

- reducing manufacturing costs

- exploration of medical implications

- expansion into different printing mediums.[52]

While not all roles to do with 3D printing will require reskilling of the Printing and Graphic Arts workforce, the commercial printing industry is well positioned to capitalise on some parts of this growth. Many of the skills required to produce 3D printed objects are part of the key competencies held by workers in the commercial printing industry. These skills include job costing, setting up complex machinery, maintaining machinery, preparing digital files for printing, and advising as to suitability of different production techniques, materials and substrates. The Australian printing industry may look to capitalise on the predicted growth in the 3D printing industry, however to do so, a skilled workforce with the necessary skills in 3D printing will be critical.

Automation

As with many industries in the Australian economy, some routine tasks in Printing and Graphic Arts sector are facing automation. The print production workflow is one area in the sector with the potential to be automated, which will require changes in the organisation and management of traditional printing organisations.[53]

> *Automation is not only an 'invest and implement' process, it has to become a permanent focus for those who manage the print shop.[54]*

However, significant automation in the Printing and Graphic Arts sector is not likely to happen immediately, with the sector internationally currently described as having 'islands of automation' rather than end-to-end integration.[55]

3.1.3   Broader product and service offerings

While some traditional areas of the Printing and Graphic Arts sector decline, industry consultation suggests businesses are expanding their services to more innovative and diverse offerings. However, they are likely to retain printing as a service offering and will still employ workers in core printing and design occupations.

This means that Printing and Graphic Arts workers are increasing in organisations with broader service focuses (whether that organisation began with a printing focus or not). Workers in these organisations will need a strong understanding of the more diversified businesses and as they develop into more senior roles, they will require strong industry awareness, adaptability and collaborative skills. Workers in printing roles will need to be aware of the possibilities offered by these broader services, so they can incorporate it is to the design and printing process. As a result, the ICP Training Package will require more qualifications that focus on these transferable skills in order to improve the employability potential of learners. Workers may also need expanded technical skills to specialise in some of these new and innovative offerings.

These broader organisations are expected to have service offerings including:

- **Customisable products**, where an individual consumer can tailor a product to be specific to their needs. Personalised label campaigns have been run successfully by Coca-Cola and Nestle UK.[56] It has been predicted that in 2019 'packaging personalisation and customisation will be at the forefront of brands' product development strategies, focused on delivering enhanced consumer engagement'.[57] Customisable products can also include those designed collaboratively with the consumer, such as choosing printed features on clothing. By customising these products in Australia, a 'value add' manufacturing process is able to occur onshore.

- **Targeted promotional materials.** Variable data printing technology has allowed businesses to be able to send more targeted and customised marketing material to individual customers, for example, on the basis of demographics or observed preferences. This can also be used for trans-promotional messaging, which is a type of marketing that includes promotional messages on transactional documents. For example, allowing for businesses to send letters, such as bills, to include full colour customised targeted advertising messaging as a part of the document. 'New technology will uniquely bring together the benefits of conventional printing with the flexibility of digital printing to deliver revolutionary engagement campaigns where instant reactivity to ever-changing regulations, market demands, consumer trends and individual tastes are paramount'.[58] Variable data printing requires skills in managing the databases from which personalised data is stored, as well as using special purpose layout programs. Customisation will also need an increasing use of data for segmentation and predictive analytics. While the technical analytics may fall outside the realm of job requirements of an ICP learner, they will need an understanding of the consumer demand for customisation and how it impacts their business.

- **Emerging product offerings.** Although in many cases, these products currently only make up a small part of the production in the sector, Printing and Graphic Arts IRC members have identified the following emerging product offerings: vinyl wrap printing, glass and metal printing, display boards and materials, radio frequency identification embedded printed product and localised custom web printing.

- **Extended services.** Many companies are innovating the way they operate and are moving into areas such as communications logistics, multi-channel marketing, advertising, digital design and 3D printing.[59]

- **Multi-channel marketing.** In response to declining demand for traditional print media, businesses appear to be refocusing towards multi-channel marketing. This includes traditional print as a part of a wider marketing business. These organisations will offering marketing and communication services from inception to delivery and may include developing more accurate and personalised touch points for customers across print, mobile, social and online platforms.[60] Working in a multi-channel context requires broader capabilities to integrate digital graphic design components, marketing skills, and traditional printing skills.

- **Sustainability.** The Printing and Graphic Arts sector continues to adapt to demand for more sustainable services, such as printing on biodegradable materials and streamlining processes.

- **Augmented reality.** An increasing number of companies, particularly kitchen, bedroom and bathroom companies, are using computer-generated imagery (CGI) to create images used in marketing material and product catalogues. For example, the furniture company IKEA uses detailed 3D computer models to create approximately 75 per cent of the images in its catalogues. This enables consumers to create realistic digital mock ups of entire rooms.[61]

With organisations offering a broader range of services with embedded printing requirements, the workers in Printing and Graphic Arts job roles within those organisations will need to understand these changing services such that they can properly be incorporated in to the design and output of the printed product. Therefore, these printing job roles, alongside non-printing job roles, will broaden in their required knowledge and skills.

3.2   Proposed responses

Given the ongoing project work to respond to these key drivers, no additional responses are proposed in this Industry Skills Forecast. The current project work for the Printing and Graphic Arts Training Package is addressing the following:

- Updates to the **structure of qualifications to align skills to the job roles in the industry**. Industry have indicated that some of the qualifications in the Training Package lack a specific purpose and therefore do not relate to job roles. In addition the current structures of the qualifications do not reflect the mix of skills required for individuals employed in the industry. Current project work will look to update the structure of six qualifications to ensure that job outcomes are identifiable to industry and that they meet current skill requirements, with two current qualifications (Certificate IV in Printing and Graphic Arts (Mail House) and Certificate IV in ePublishing) to be removed due to no enrolment numbers and no identified job outcomes. In addition, changes to the titles of the six remaining qualifications will be considered to better reflect industry terminology.

- Updates of units of competency in the ICP Training Package to address significant **duplication of units of competency** as a result of the 2015 consolidation of qualifications. The 2015 consolidation combined a number of specialised qualifications while keeping all units of competency, which has led to multiple units of competency with similar content included in single qualifications. The current projects will look to remove duplicative training products and streamline the Training Package.

- Updates to Training Package components to reflect **significant advancements in technology in the industry.** In addition to creating new job roles in areas such as 3D printing and digital printing, technological advancements mean that processes in many areas of print have changed in the past five to ten years. Many of the current native ICP and imported units of competency require learners to demonstrate proficiency in operations that are now obsolete or dramatically different due to improvements in technology, machinery and techniques. Project work will look to update units of competency to reflect current and future technology and skill requirements.

- Creation of skill sets to address limited options for qualified individuals **to gain skills in additional specialist areas**. Skill sets will allow individuals to undertake training in a specific area of the industry and gain expertise in the skills required by employers either in addition to, or alongside, qualifications. Skill sets would benefit employers in recognising the skills of potential and current employees and allow for **upskilling and reskilling**, particularly in instances where organisations look to expand their service offering in response to industry adjustment, a broadening of service offerings or to transition to different types of printing due to technological advancements.

4 Consultation undertaken

Given that this Industry Skills Forecast does not include any new proposed work on the ICP Training Package, consultation on the content has been informed by, PwC's Skills for Australia's ongoing work engaging with employers, trainers and learners.

Consultation on this Industry Skills Forecast is currently ongoing and includes publication of this document for public review before it is finalised. If you would like to share comments or feedback on this document, you can provide these to info@skillsforaustralia.com.

The finalised version of this document for submission to the AISC will include a summary of stakeholders consulted and issues and sensitivities raise in those consultations.

Proposed Schedule of Work

5 *Proposed schedule of work overview*

PwC's Skills for Australia works in an ongoing manner to ensure that training provided in the ICP Training Package is fit for purpose and that workers in the Printing and Graphic Arts sector have the skills required to adapt to these key drivers for change. Details of all previous and current projects can be found on the Printing and Graphic Arts industry page on the PwC's Skills for Australia website.

The ongoing project regarding the printing industry operations and print preparation, is currently in the Consultation stage, with the full review of the ICP Training Package in early preparations.

Given the scope of that ongoing work, the proposed schedule of work for the next four years, shown below, has no additional proposed projects. It is important that both training organisations and employers have time to understand and implement the changes made in this ongoing work before any future projects are scheduled. It is also important to note that projects across the four years of 2016-17 to 2019-20, all units of competency in ICP Training Packages have been reviewed, either through a project (where they are added, edited or removed) or in assessing if they are relevant for a project (and were found to not require editing or deletion).

However, it is also acknowledged that training needs to be adaptable and flexible. Therefore, if any significant but unforeseen technological, regulatory or other changes impact the sector, projects may be proposed for 2020-21 or further years to ensure that training stays relevant.

6   IRC Sign off

This Industry Skills Forecast and Proposed Schedule of Work was agreed to by:

[Final version of this document will be finalised with Chair signature]

Appendices

Appendix A
Administrative Information

About PwC's Skills for Australia

PwC's Skills for Australia supports the Printing and Graphic Arts Industry Reference Committee (IRC).

As a Skills Service Organisation (SSO), PwC's Skills for Australia is responsible for working with industry and our IRC 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.

- Revise our vocational qualifications and training content to better match what people will learn with the skills needs of our industries and businesses, giving our population the best possible chance of developing work ready skills.

About the Industry Reference Committee

The Printing and Graphic Arts IRC includes 10 members. The Printing and Graphic Arts IRC membership was refreshed in June 2017.

Table 2: Printing and Graphic Arts IRC Membership

Name	Organisation	Title	IRC role
Andrew Macaulay	Printing Industries Association of Australia (PIAA)	CEO	IRC Chair
Lorraine Cassin	Australian Manufacturing Workers Union (AMWU) Print Division	National Secretary – AMWU Print Division	IRC Deputy Chair
Robert Black	Holmesglen Institute	Program Manager – Printing	IRC Member
Ben Eaton	Starleaton	CEO	IRC Member
Kerim El Gabaili	OnePoint	CEO	IRC Member
Julie Hobbs	FutureNow Creative and Leisure Industries Training Council & Design Institute of Australia	CEO/National Immediate Past President	IRC Member
Peter Lane	Lane Print Group	Managing Director	IRC Member
Michelle Lees	HP PPS Australia Pty Ltd	Marketing Manager – Graphic Solutions Business	IRC Member
Brett Maishman	Fuji Xerox Australia Pty Ltd	National Industry Manager	IRC Member

1   ABS (2018) *Counts of Australian Businesses, including Entries and Exits, June 2013 to June 2017,* cat. no. 8165.0, business by main state by industry class by employment size ranges

2   Based on the mapping of qualifications in Printing and Graphic Arts Training Package to Australian and New Zealand Standard Classification of Occupations, Department of Jobs and Small Business (2018) *2018 Occupational Projections – five years to May 2023*

3   PwC (2018) *Australian Entertainment and Media Outlook 2018-2022*

4   Real Media Collective (2018) *2018 Industry Report: Catalogue & Letterbox Marketing Issue*, available at <https://www.therealmediacollective.com.au/wp-content/uploads/2018/10/RMCIndRep18_Web.pdf>

5   IBISWorld (2018) *IBISWorld Industry Report C1611 Printing in Australia*

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