



Skills Australia

Building Australia's Defence Supply Capabilities

Main Report for the Defence Industry Workforce Strategy





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2012

On 27 June 2012, the Skills Australia Amendment (Australian Workforce and Productivity Agency) Bill 2012 received Royal Assent. This Bill amends the *Skills Australia Act 2008* to implement the government's commitment to establishing the new agency, which has replaced Skills Australia from 1 July 2012. As this body of work was undertaken prior to the transition to the Agency, it has been published under Skills Australia.

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1 Key Findings

Australia's Defence industry is important given the high level of technology used in Defence materiel. The type of capabilities used to support the Australian Defence Force (ADF) can provide broader benefits to the national economy through technology diffusion to other sectors, particularly the manufacturing sector. Defence industry also has the reputation of supplying interesting and challenging work, which is important in attracting skilled workers to the industries and in encouraging these people to remain in the industry when particular projects come to an end.

The research and consultations undertaken to underpin this work suggest this capability could be compromised by three key factors.

First, an issue that was frequently raised by industry was that Defence materiel acquisitions tend to be uneven, and there can be substantial intervals between acquisitions. Also of concern to industry are the delays in the acquisition process, including the time taken to award a contract. This poses considerable challenges for firms in planning their workflows and retaining and indeed developing skilled staff in the period between major Defence projects.

Smoothing out the gaps between acquisition projects and reducing delays in the acquisition process would provide greater continuity and certainty to organisations, which would in turn create a context more conducive to these organisations developing and retaining a skilled workforce. For example, we understand the United Kingdom has scheduled production of an additional submarine in its latest acquisition program to bridge production gaps between the last of that series and the first submarine of the new type planned for production after the current series. This may be a good example for consideration by Government.

Second, while Australia's Defence industry is relatively small compared to other Australian industries in terms of employment, the industry has substantial capacity to supply the materiel needs for the ADF for both acquisitions and sustainment. The core industries are also well supported by Australia's broader industrial base.

While the number of staff employed to support particular projects is relatively small compared to Australia's industrial capacity, the staff engaged are frequently very highly skilled. For example, tradespersons employed in the naval shipbuilding industry often require specialised skills, considerable post trade training and relevant industrial experience to meet the exacting standards required. Better support is required to deliver the specialised skills that the domestic Defence industry requires to participate more effectively in Australian Defence acquisitions.

Third, some skills and occupations that are critical to Defence industry are in general shortage within our economy. For example, our industry survey showed Defence industry firms are currently experiencing difficulties filling vacancies for occupations such as system engineers and electronic engineers.

In some skills areas, new skills supply from education and training may not be adequate to meet emerging demands. Although skills supply is expected to increase for some specialisations in engineering, skills supply in electrical and electronic engineering and technology, manufacturing engineering, and technology and geomatic engineering are all projected to decline across the period. The projected declines in electrical and electronic engineering and technology are of particular importance, as these skills are highly valued within Defence industry.

While skills supply seems likely to increase significantly for some trades in the period to 2020 (notably for electricians), this is not the case for electronics and communications tradespersons, a key skill area for Defence industry, where skill shortfalls are likely.

There is also strong demand for such skills in the resources sector and more broadly in the economy. The competing industry demand for these skills could lead to inflationary pressures in some pockets or capability constraints.

Our discussions with industry and other stakeholders identified the important contribution that technicians make to the Australian Defence industry. Although not large in employment terms within the Australian and New Zealand Classification of Occupations (ANZSCO) categories, the importance of their relationship with the trades and professions, particularly within the engineering occupations, should not be under-estimated. Greater use of teams of technicians and production employees as appropriate to perform more of the work undertaken by engineers could help to reduce demand for engineering skills and lead to better use of skills within the workplace.

In order to address these concerns about skills supply, in Chapter 4 of this report we have identified a range of creative solutions to assist with workforce development in Defence industry. These solutions form the basis of a workforce development strategy for Defence industry.

It is intended that these solutions will maximise the access of Defence industry to suitably skilled workers, to link these workers to effective and ongoing skills development, and to position organisations to retain and nurture specialist skills.

These will require a partnership between Government, industry and education and training providers to be successfully implemented. Funding of these solutions can be obtained through a variety of sources, including through funding by industry, Defence or the utilisation of Government programs such as the National Workforce Development Fund.

Skills Australia's vision for this Strategy is that Defence industry has the workforce capability it requires for a productive, sustainable and inclusive future, and that Australian enterprises have the capacity to develop and use the skills of their workforce to maximum advantage for the benefit of industry and the community.

2 Introduction

In September 2011 the Hon Jason Clare MP, the Minister for Defence Materiel, commissioned Skills Australia to develop a workforce strategy for Australia's Defence industry¹. The purpose of the Strategy is to better position Defence industry to access the skilled workforce required to participate in opportunities for Australian Government Defence procurements.

This is the second report on this issue prepared by Skills Australia. In January 2012, a Discussion Paper was released which presented our initial analysis and posed a series of questions to assist in developing options to better skill the Defence industry workforce.

Following the release of the Discussion Paper, we consulted extensively with industry and relevant organisations including representatives from government, education and training institutions, industry associations, Defence industry, and unions. These consultations were held in every capital city and Newcastle in March 2012. More than 150 stakeholders attended the consultation sessions and we received 29 written submissions about the Strategy. Summaries of these consultations and the industry surveys which were also conducted are contained in the appendices to this Report.

Skills Australia's remit is to provide advice to government on Australia's skills and workforce development needs. In the 2010 report *Australian Workforce Futures: A National Workforce Development Strategy*, Skills Australia defines workforce development as (Skills Australia, 2010: 7):

Those policies and practices which support people to participate effectively in the workforce and to develop and apply skills in a workplace context, where learning translates into positive outcomes for enterprises, the wider community and for individuals throughout their working lives.

This concept of workforce development incorporates the formal learning undertaken by individuals in secondary schooling and the tertiary sector, but it includes much more than that. Skills and capability development is an ongoing responsibility that requires employees, employers and education and training providers to work together to ensure that organisations can develop, attract and retain the skills required to drive productivity, and that individuals can acquire the skills they need to do their jobs effectively.

The capacity of Australia's Defence industry to grow, attract and retain specialist skills and build on these skills through upskilling and reskilling is crucial to the competitiveness of this industry. Organisations competing for Defence procurement contracts require a balance of professional, trade, technical and managerial skills, and an ongoing commitment to skills development and upskilling to ensure the currency of these skills.

This report presents Skills Australia's analysis to underpin a national workforce development strategy for Defence industry. The report also provides recommendations on options to improve skills supply to the industries to better position them to take part in Defence acquisition and sustainment procurements over the next decade.

¹ In this report, the term 'Defence industry' is primarily directed at those organisations in broader Australian industry which contract to the Department of Defence to provide goods and services to support Defence capability.

3 Key issues for skills demand and supply in Australia's Defence industry

1 The complexity of Defence procurement and ebbs and flows in procurement activity inhibit the ability of organisations in Defence industry to grow, attract and retain specialist skills.

The opportunities that exist for Australia's Defence industry to participate in Defence procurement are derived from the Australian Government's definition of the role of the ADF. This includes the equipment, facilities and support required to allow the ADF to undertake their role.

Defence White Papers are Australia's principal public policy documents regarding Defence and the ADF. The White Paper presents the Australian Government's long-term strategic direction and commitments for Defence as well as its future capability requirements.

While the White Paper sets out the long-term capability goals for Defence, the DCP is a rolling program of unapproved major capital equipment projects which have been identified to meet the requirements of the White Paper.

The Defence White Paper 2009 forecast a significant expansion of the ADF, which was reflected in subsequent Defence Capability Plans (DCPs). In July 2012, the DCP was aligned with the four-year Forward Estimates period in the Budget, which should provide greater certainty for industry. The DCP will remain subject to change as strategic circumstances evolve, new technologies emerge and priorities are updated to reflect the changing needs of the ADF. However, it should be noted that there is less certainty outside the Forward Estimates period, and historically projects are less well defined and are more subject to change, both in terms of scope, cost and schedule (Defence 2012c: i).

The first principle of the Government's Defence industry policy is that Defence strategy and the capability needs of the ADF will determine Defence's investment priorities. Therefore, Australian industry capability is not the primary driver of military capability decisions.

Nonetheless, Defence industry receives a significant portion of the funding allocated to Defence for the procurement of goods and services, including military capability.

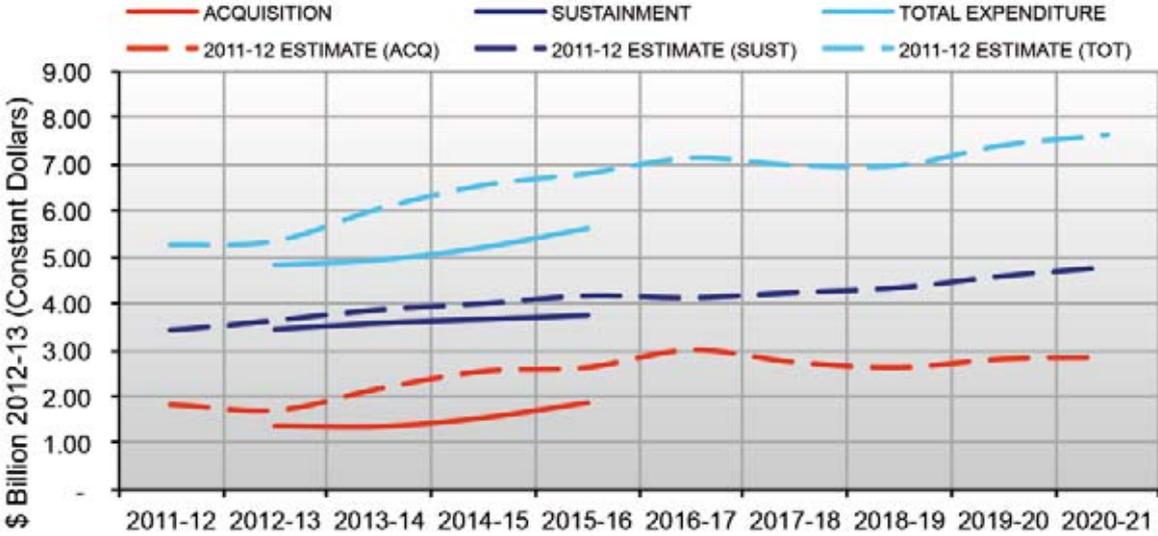
Over the next ten years, the DMO estimates that approximately 53 per cent of Australia's expenditure on materiel acquisition and sustainment will be spent in-country. Over the same period, an estimated 37 per cent of capital equipment acquisition expenditure will be spent on domestic activity, while approximately 70 per cent of the ADF's sustainment expenditure will be spent on work performed in Australia.

Figure 1 shows the 2012 DCP forecast for DMO in-country acquisition and sustainment expenditure over the Forward Estimates period as a result of the 2012-13 Budget. This figure also details the 2011 DCP forecast for DMO in-country expenditure for 2011-2021. The 2011 forecast is included here as it provides projections across the decade.

The Forward Estimates forecast (refer to the continuous lines in **Figure 1**) shows steady growth in sustainment from 2012-13 to 2015-16, and projects a compound annual growth rate of about 2.8 per cent. Acquisition activity exhibits strong growth over the last two years of the period, resulting in an overall compound annual rate of 10.6 percent across the Forward Estimates. Total in-country activity is expected to grow at a compound annual growth rate of 5.2 per cent over this time.

The forecast for 2011-2021 (refer to the broken lines in **Figure 1**) suggests strong growth in total in-country expenditure over the second half of the decade. In particular, significant growth is expected over the last two years of the decade. Based on estimates in the 2011 DCP, spending is projected to increase by 6.2 per cent from 2018-19 to 2019-20, and by 3 per cent from 2019-20 to 2020-21.

Figure 1: DMO Total In-Country Materiel Expenditure – modelling 2011-12 to 2020-21



Source: Department of Defence, 2012

It should be noted that this expenditure forecast is subject to change over time. Defence projects are complex, have long lead times and are often delayed. Project planning is subject to change and often influenced by the Budget process and this makes it difficult for firms to commit to long term workforce planning. A new White Paper has been commissioned for release in 2013 and this is likely to change the expenditure forecasts provided above.

Our discussions with Defence industry organisations indicate that they still expect that they will be required to rapidly expand their skilled workforces to meet future demand. However, a critical factor for developing and maintaining a skilled Defence industry workforce is maintaining a constant flow of project work to industry. Delays in the acquisition process can also pose a significant challenge for workforce planning in Defence industry. Such delays impact on the industry’s ability to identify the optimum time to invest in workforce expansion or upskilling, which can result in retention issues regarding key personnel and/or additional costs to the company.

Intermittent workflows and uncertainty about the availability of future Defence acquisition and sustainment work could be eased by smoothing out the gaps between acquisition projects. This would provide greater continuity and certainty to Defence industry, creating a context more conducive to these organisations developing and retaining a skilled workforce.

2 The number of workers employed to support Defence procurement projects is relatively small in the context of Australia’s industrial base, which suggests that there is sufficient workforce capacity to support Defence industry. However, some skills and occupations that are critical to Defence industry are in general shortage within our economy, and there is competition for these skills from other industries.

Defence industry is a relatively small employer in context of the Australian economy. Skills Australia and DMO projections indicate that approximately 15 000 – 25 000 persons employed by firms in Defence industry whose current work directly relates to expenditure by the DMO at any given time. There will also be second order flow-on effects where jobs arise in other non-Defence specific industries because of the income effects of the Defence work, or as a result of the procurement by the Department of Defence of other general equipment for military use.

Given that many of the firms working for Defence also undertake significant civilian work, many of the employees engaged directly or indirectly in supporting Defence’s materiel requirements could move between military and civilian tasks if required. A degree of uncertainty over the exact size of the Defence materiel workforce is therefore to be expected.

This suggests there is sufficient workforce capacity within broader Australian industry at this time to meet the skills demand of Defence industry. However, other sectors within the Australian economy, particularly the resources sector, also require some of the same skills. Potential skill imbalances in many of the occupations of importance to Defence industry are emerging.

In our Discussion Paper, we identified potential skill gaps in terms of leadership skills, professional skills and skill gaps for technical and trade workers. The analysis undertaken for this report reinforces this view, especially in respect to technical and trade workers and suggests potential for demand to exceed supply in many trades over the period ahead.

This report details national supply and demand projections for professional and trade and technician occupations which are of importance to Defence industry for the period to 2016, taking into account potential employment growth, replacement demand, and supply projections. These are provided at **Table 1** and **Table 2**.

Table 1 indicates that, across the economy, supply in most professions is likely to be sufficient to meet future demand. However, there appears to be potential gaps in a number of professions, including engineering, ICT, and marine transport.

Table 1: Projected national annual demand and supply growth for major professions in Defence industry

	Replacement Demand		Employment Growth		Total Demand		Total supply	Demand and Supply Gap
	%pa	No.	%pa	No.	%pa	No.	No.	
Air transport	1.7	242	2.2	312	3.9	555	499	Shortfall
Accountants	0.9	1420	1.9	2944	2.8	4364	4788	Surplus
Industrial, mechanical and production engineers	1.1	267	2.5	611	3.6	878	839.0	Shortfall
Management and organisation analysts	1.0	464	2.5	1169	3.5	1634	22634	Surplus
Engineering professionals	1.1	1319	5.3	6334	6.4	7653	8175	Surplus
Technical sales representatives	1.5	450	2.8	854	4.3	1304	1959	Surplus
Software and applications programmers	2.3	1571	1.4	984	3.7	2555	1895	Shortfall
Other engineering professionals	1.3	104	1.2	98	2.5	202	2281	Surplus
ICT business and systems analysts	2.3	526	3.1	703	5.4	1229	667	Shortfall
Marine transport professionals	1.2	100	1.5	129	2.7	229	90	Shortfall

Source: Australian Bureau of Statistics *Labour Force Survey* data, DEEWR employment projections, DEEWR Higher Education data collection, Graduate Careers Australia

Notes:

- (1) Replacement demand is projected by Skills Australia over the period 2011-2016.
- (2) National employment growth is projected by DEEWR between 2010-11 and 2015-16.
- (3) The average 2011 employment is calculated by averaging the 2011 employment in replacement demand projection and employment growth projection from DEEWR.
- (4) Total annual supply is projected by Skills Australia over the period 2010-2017, based on estimations of trends in completions from historic data using data from the DEEWR higher education data base and Graduate Careers Australia's data on the share of graduates available to work, including those working in areas related to their qualification.
- (5) The demand and supply gap is the difference between total demand and total supply.

Table 2 provides data about potential national skill gaps in the trades and technical occupations in the period to 2016. In terms of the key trade and technical occupations in Defence industry, our analysis points to potential skill imbalances in many of these occupations. This is important, because these workers are in demand in the resources sector and to underpin major infrastructure projects as well as Defence acquisition and sustainment projects.

Modelling against future expenditure forecasts suggest a need to increase numbers of skilled workers within the industry over the next 10 years. Weaknesses in skills supply are also evident in some trades, including the electronics trades, electrical, and structural steel and welding trades workers. There are also concerns about deficiencies in the availability of suitably trained and experienced project managers.

Our analysis suggests that, without recourse to overseas labour, skills supply will diminish in many key trades over this time period. Moreover, persons working in these occupations are likely to be keenly sought in the resources sector and for infrastructure developments such as the National Broadband Network over this time period.

Table 2: Projected national annual demand and supply growth for major trades and technical occupations in Defence industry

	Replacement Demand		Employment		Total Demand		Total Supply	Demand and Supply Gap
	%pa	No.	%pa	No.	%pa	No.	No.	
Building and Engineering Technicians	1.7	1861	3.7	4077	5.4	5938	286	Shortfall
ICT and Telecommunications Technicians	2.7	1344	2.6	1294	5.3	2638	777	Shortfall
Automotive Electricians and Mechanics	1.9	2038	2.0	2198	3.9	4236	4438	Surplus
Fabrication Engineering Trades Workers	1.6	1495	2.5	2289	4.1	3783	2245	Shortfall
Mechanical Engineering Trades Workers	1.6	2182	1.1	1518	2.7	3695	3510	Shortfall
Panelbeaters, and Vehicle Body Builders, Trimmers and Painters	1.8	589	0.1	26	1.9	615	1307	Surplus
Plumbers	1.6	1313	5.6	4639	7.2	5952	1887	Shortfall
Electricians	1.7	2219	7.8	10354	9.5	12573	4221	Shortfall
Electronics and Telecommunications Trades Workers	2.0	1861	2.3	2149	4.3	4007	1073	Shortfall
Textile, Clothing and Footwear Trades Workers	1.5	242	-4.5	-703	-2.9	-461	155	Shortfall

Source: Australian Bureau of Statistics *Labour Force Survey* data, DEEWR employment projections, DEEWR Higher Education data collection, Graduate Careers Australia

Notes:

- (1) Replacement demand is projected by Skills Australia over the period 2011-2016.
- (2) National employment growth is projected by DEEWR between 2010-11 and 2015-16.
- (3) The average 2011 employment is calculated by averaging the 2011 employment in replacement demand projection and employment growth projection from DEEWR.
- (4) Total annual supply is projected by Skills Australia over the period 2010-2017, based on estimations of trends in completions from historic data using data from the DEEWR higher education data base and Graduate Careers Australia's data on the share of graduates available to work, including those working in areas related to their qualification.
- (5) The demand and supply gap is the difference between total demand and total supply.

It should be noted that the projections provided in **Table 1** and **Table 2** are economy wide and correspond to the ANZSCO Minor Group 4 digit level. Therefore, the projections do not directly address the specific occupations that are required for particular Defence procurement activities. Many of these occupations are listed at the more detailed ANZSCO 5 digit and 6 digit levels and it is difficult to obtain authoritative labour force data at this level of detail. However, the economy-wide projections do provide an indication of the health of the overall labour pool from which these specific occupations are drawn.

Due to the data limitations we surveyed Defence industry companies and engaged in consultations in order to gain greater information and insights into the skills issues that companies face.

3 The exacting capabilities required to support Defence procurement projects create further recruitment challenges for organisations in Defence industry.

Organisations within Defence industry face shortages in specialist occupations unique to the industry. The specialised nature of these roles and the requirements for workers with industry experience means that there are often only a small number of suitable applicants for many vacancies within organisations. As identified above, there appear to be potential skill imbalances in many of the occupations of importance to Defence industry.

Organisations in Defence industry are already experiencing difficulties filling vacancies such as in electronics engineering, electrical engineering and in some specialised software engineering skills. In most cases, industry reports difficulty with finding suitable candidates.

However, there are also reports of thin markets in some occupations. For example, one organisation reported difficulty recruiting a Plant Engineer, claiming that there are only 100 people in Australia with the relevant qualifications and experience in this area.

Electricians were reported as the key trade and technician skills imbalance issue. As an example of the difficulties encountered, the Australian Submarine Corporation (ASC) reported difficulty in attracting sufficiently qualified and experienced welders. Given the specialist nature of skills required in Defence submarine and shipbuilding work, the ASC upskills its tradespersons in the specific skills requirements that are not covered in standard trade qualification training programs.

Organisations that provided submissions identified current skills imbalances in a number of occupations. A general theme of concern related to issues with recruiting engineers across most disciplines and the following professional, technician and trades occupations:

- **Professional Occupations** where there were recruiting concerns included: Engineers (aeronautical, chemical, civil, electrical, electro-optics, electronics, electronic warfare, combat systems, materials, marine construction, mechanical, radar, software, structural, safety and systems), Naval architects, Statisticians, Scientists (especially physicists), Computer Scientists, and System analysts.
- **Technician occupations** where there were recruiting concerns included: Computer aided design draftspersons, Estimators, and Planning and Scheduling officers.
- **Trades** where there were recruiting concerns included: Fitters, Boilermakers, Computer numerically controlled machinists, Diesel and motor mechanics, Shipwrights, Sheet metal workers, Structural steel welders, Electronics instrument fitters, and Electricians.

There are considerable overlaps across these occupational categories. In particular, there are overlaps between the work undertaken by technicians, and work undertaken by professional engineers, and the two groups commonly “compete” to perform the same work.

This overlap in skills can be used by Defence organisations to improve the utilisation of skills and boost productivity. For example, recently graduated professional engineers often report skills gaps in key areas of project management (Watson and McIntyre, 2011: 39). In its submission to this Report, the Australian Manufacturing Workers' Union note that technicians develop a range of skills in project management in the performance of their job roles, and that senior technicians often have extensive industry experience that forms a useful resource for the management of complex projects. Organisations can apply these skills to fill skills gaps related to project management, and can also encourage technicians to engage in knowledge transfer to develop the knowledge, skills and abilities of graduate engineers in project management.

In general, Defence industry can mitigate the impact of skills imbalances by maximising the contributions that existing workers can make in the workplace, and considering how well people's abilities have been deployed, harnessed and developed to optimise organisational performance (UK Commission for Employment and Skills, 2010: 3). These practices form a key part of a workforce development approach to skills utilisation.

4 A partnership approach to workforce development between industry, government and education and training sector is required to maximise the access of Defence industry to suitably skilled workers, to link these workers to effective and ongoing skills development, and to position organisations to retain and nurture specialist skills.

Effective workforce development planning relies on a partnership approach between industry, government and the education and training sector, and on a shared agenda between all key organisations responsible for workforce development in Defence industry.

Industry can invest in the skills of apprentices and university graduates, and work with schools and education and training providers to promote employment opportunities in Defence industry. It can also identify and share innovative approaches to retaining specialist skills, particularly at the end of, or between, projects.

The education and training sector can contribute by working with industry to tailor training solutions to specialist skills demands and assist with the preparation of workforce development plans.

The Australian Government and Defence in particular, can improve the alignment between procurement policy settings and investments in skills and capability development, funding innovative approaches to shared skills issues (through funding by Defence or utilisation of programs such as the National Workforce Development Fund), and assist industry to retain specialist skills during gaps in procurement activity.

The next section will build on the above analysis and identify a range of strategies to maximise the attraction, effective utilisation and retention of skills in Defence industry.

4 Strategies to address skills issues in Australia's Defence industry

This section presents strategies to maximise the access of Defence industry to suitably skilled workers, to link these workers to effective and ongoing skills development, and to position organisations to retain and nurture specialist skills.

A partnership approach to workforce development

These strategies rely on a partnership approach between industry and government and a shared agenda between all of the players responsible for workforce development in Defence industry.

The concept of workforce development is already embedded in the planning frameworks of organisations involved in Defence acquisition and sustainment. Most organisations involved in Defence procurement invest considerable resources to identify, attract and retain the skilled workforce required to deliver Defence contracts. These organisations also invest in the ongoing development of the skills and capacities of employees, through the provision of formal learning including post-trade or postgraduate training, and informal learning including on-the-job skills development and mentoring.

These investments in organisational development will continue to be important. The capacity of Defence industry to grow, attract and retain specialist skills and build on these skills through upskilling and reskilling is crucial to the competitiveness of this industry. Organisations competing for Defence procurement contracts require a balance of professional, trade, technical and managerial skills, and an ongoing commitment to skills development and upskilling to ensure the currency of these skills.

Key themes for improving workforce development

The partnership approach discussed above has been mapped across five key themes for improving workforce development in Defence industry. Each theme includes a number of specific strategies.

The themes include:

1. Improving the attraction and recruitment of critical skills to Defence industry
2. Upskilling existing workers to meet skills gaps and enhance capability development
3. Retaining specialist skills in the industries
4. Enhancing policy drivers and incentives related to skills supply
5. Building management capability to nurture effective workforce development.

4.1 Improving the attraction and recruitment of critical skills

As previously mentioned, Defence industry is small compared to other Australian industries in terms of employment. In most cases, the industries draw on very small proportions of the total workforces employed in key trades and professions. However, many organisations still report difficulties in the attraction and recruitment of the skills required to compete for Defence procurement projects.

In particular, these organisations report that some of the critical occupations for Defence industry are in shortage. For example, our industry survey showed Defence firms are currently having difficulties filling vacancies for occupations such as system engineers and electronic engineers. There is also strong demand for these skills in the resources sector and more broadly in the economy.

In addition, there are some very distinct, specialised roles that are vital to specific sections of Defence industry. Organisations seeking to recruit for these positions must select candidates from very small employment pools.

Businesses seeking to recruit for these specific occupations require workers with a high skills base and a degree of industry experience. For example, welding tradespersons engaged in the naval shipbuilding industry are expected to combine excellent basic skills with relevant industry experience, and even then are likely to require post trade training to provide significant value to the hiring organisation.

These challenges to recruitment require organisations involved in Defence acquisition and sustainment to develop innovative approaches to recruit successfully and attract the skills required to deliver Defence projects. Many Defence industry organisations, particularly prime contractors, have strategies in place to attract key skills and maximise the retention of these skills, including targeted graduate programs and detailed succession plans supported by skills development. These strategies improve the likelihood that organisations will be able to successfully build their organisational capability.

One advantage for Defence industry compared to other industries is access to a range of sources of skills supply, including access to ex-ADF staff, in addition to the more traditional forms of supply through the national education and training system. A number of strategies can be employed to boost these sources of supply of specialist skills to the industries.

Across Defence industry, the greatest demand for skills relates to highly technical occupations in the engineering professions and trades. The supply of engineers, particularly engineering professionals, is dependent on students continuing with high-level science, technology, mathematics and science (STEM) subjects in upper secondary school.

Therefore, strategies are required to increase the numbers of young people engaged in the STEM subjects that lead to critical occupations for Defence industry. In addition, more work needs to be done to promote Defence careers to young people.

The Australian tertiary sector provides the strongest source of skills supply to Defence industry. However, entry-level workers, particularly tradespersons, often do not receive the specialised training required to prepare them for discrete roles in the industries. This means that extensive training needs to be conducted in-house in order to ensure that these workers have the skills required to do their jobs effectively.

To ensure that entry-level workers are adequately prepared for work in the industry, specialised training and education provision is required. We recommend that Defence, along with industry partners, support the creation of a Defence Skills Centre of Excellence to drive the development of this specialised training.

Opportunities for tertiary students to engage directly in employment experiences in Defence industry are also important. Increasing the provision of scholarships, cadetships and work experience programs will present these opportunities to a larger pool of tertiary students.

Attracting young people to the industries

Careers in Defence industry

Organisations engaged in Defence industry need to demonstrate the value of careers in the industry to school students and their parents, particularly school students with the capabilities required to work in specialist occupations. There are a number of options available to promote Defence careers to school students, including the development of a “taster” program similar to the ‘Try a Trade’ program, visits to schools from specialist staff in the industries and the use of the Future Submarine Program as a promotional tool to encourage school students to pursue careers in maths and sciences. These options could build on school engagement work already underway through the Defence Work Experience Program.

Each of these recommendations requires engagement between Defence, industry and education providers in order to be successful. The following case study of the Defence-funded Manufacturing and Education (ME) Program is a good example of effective collaboration between industry and the education and training sector.

Case study - Manufacturing and Education Program

The Manufacturing and Education (ME) program began in 2010 as a Defence funded pilot project to engage young people into considering manufacturing careers in the Hunter region. Advanced manufacturing includes the use of technology to improve products and processes and is increasingly utilised by Defence industry.

The ME program provides an opportunity for partnership companies to invest in the long term future of their sector by engaging current school students in on-the-job experience and additional education. 25 schools are now involved in the Program, and partnership companies include Defence prime contractors Thales, Forgacs and BAE Systems.

Part of the program's success has been the integration of the program with local training providers and tertiary institutions. These connections have enabled the creation of specific pathways into School based Traineeships, Scholarships, Apprenticeships and Cadetships. By the end of 2011 the program had worked with 1 200 students and effected the following changes in the subject choices of High School Certificate students:

- 250 per cent increase in Engineering Studies
- 50 per cent increase in Metals and Engineering
- 33 per cent increase Extension 1 Mathematics
- 11 per cent increase in examination mean for Engineering Studies

The ME program has demonstrated a capacity to create innovative pathways into the manufacturing industry, and has succeeded in increasing the uptake of mathematics, science and engineering studies in high schools and pathways into university Engineering courses.

Recommendation 1.1

To raise the profile of Defence as a career option and enable students to understand pathways to Defence industry, industry associations work in conjunction with secondary schools to develop and implement a national program providing school students with 'tasters' relevant to careers in Defence industry. This program could be modelled on the 'Try a Trade' initiatives currently operating.

Recommendation 1.2

Defence prime contractors make key industry personnel available to visit schools, talk about their career pathways and promote career opportunities in Defence industry.

Recommendation 2

The Australian Submarine Corporation, state and territory governments and relevant peak organisations position SEA 1000 as a promotional vehicle for recruiting employees with science and engineering skills by developing a set of pathway models for key occupations in the design, construction and sustainment of submarines, and promoting these models through the 'tasters' and school visits proposed above. Other flagship programs, including SEA 1180 – the Offshore Combatant Vessels program – should also be earmarked for this type of promotion.

Boosting engagement of school students in science, technology, engineering and mathematics (STEM) subjects

The number of young people studying STEM subjects at school has a direct impact on the nature of both their post-secondary studies and potential career paths.

A number of Defence and industry programs are in place to improve the study of STEM subjects in schools. These include the Defence Technical Scholarships Program, School Pathways Programs funded by the DMO – the Advanced Technology Schools Pathway (SA), the Marine Industry School Pathways Program (WA) and the Advanced Manufacturing School Pathways Program (NSW), as well as the School Aerospace Challenge launched by the DMO in 2012. Industry representatives and program coordinators have indicated that these programs create and foster a level of student interest in STEM subjects. However, the lack of oversight or awareness of these programs at a regional, state or even national level means that there is potential for unnecessary duplication of effort.

In addition to the above programs, the Chief Scientist's report on mathematics, engineering and science teaching identifies the range of State and Territory government funded initiatives and programs to support the teaching of science and maths in their respective education systems (Chief Scientist, 2012:34).

Prior to any future work being undertaken on the development of any new programs, Defence should work with the Office of the Chief Scientist to identify what non-government programs are currently being offered to encourage STEM study in schools. If the above assessment identifies the need for new programs, Defence industry, schools and the training sector need to work in partnership to develop and implement new programs. This may well be required to address skills in niche specialisations such as geo-spatial awareness, and textile engineering and manufacture.

Recommendation 3

To avoid duplication of effort, Defence liaise with The Office of the Chief Scientist to assess the programs currently being offered to encourage STEM study in schools. This assessment needs to identify the region in which the programs are being run, the target population, the skills being targeted and developed, the industry/education partnership arrangements, and the evidence available to determine the impact of the program on students' choices for future study and careers.

If this data collection process identifies the need for new programs, communication and marketing campaigns should be developed between the DMO and industry associations to demonstrate the value of careers in Defence industry to schoolchildren and their parents, as well as the broader community.

Expansion of Aviation High School concept to raise awareness of opportunities in Defence

An effective method of attracting students to careers in specific industries is to incorporate the study of these industries into the curriculum. The Aviation High School (see box below) represents an excellent example of this approach.

It is recommended that Defence work with the project partners to examine the benefits of this project in more detail, and explore the potential for expanding the program in other states, and in relation to other industries, especially the naval shipbuilding sector.

Case study - Aviation High School

In January 2004, Education Queensland, Boeing Australia and Aviation Australia established the Aerospace Project to create pathways for students into Queensland's growing aerospace industries. Six schools (three in the vicinity of Brisbane Airport, and three in the vicinity of RAAF Amberley) were initially targeted as the "gateways to the aerospace industries".

The Project has expanded to 23 schools, and the number of formal aerospace industry partners has increased to eight (including Boeing Defence Australia, Aviation Australia, Australian Aerospace, GE Aviation Systems Australia, Brisbane Airport Corporation, Qantas, Virgin Australia Airlines, and Department of Defence). In 2007, Hendra Secondary College, one of the six initial schools, became Aviation High and is now the hub school for the Project.

The subject 'Aerospace Studies' was developed with industry input, and is offered to Year 11 and 12 students in all Project schools. The curriculum at Aviation High offers Queensland Studies Authority subjects from Years 8 to 12 that have been contextualised with aerospace and aviation content across a broad range of subject areas. The school, in partnership with tertiary and post school training providers intends to establish an end-to-end education model from the classroom to employment with the industry.

Source: Aviation High website.

Recommendation 4

Defence (through the Defence and Industry Skills Taskforce [DIST]) work with industry and State education authorities to determine whether the Queensland Aerospace Project could be duplicated across regions, focusing on other aspects of Defence industry (such as the maritime sector).

Tailoring entry-level training and undergraduate education to Defence industry

Creation of a Defence Skills Centre of Excellence to deliver targeted skills supply

Given the likely increase in demand for specialised skilled labour for Defence industry over the next decade, a market is emerging for the provision of specialised training to prepare workers for specific roles. For example, specialised training is required to prepare welders for employment in the specialised welding required for naval shipbuilding.

Several industry stakeholders have raised concerns that the training sector does not currently provide the specialised training required to meet the needs of Defence industry. As a result, organisations are often required to invest considerable resources into upskilling and on-the-job training to ensure that entry-level employees can make productive contributions to Defence acquisition and sustainment projects.

The establishment of a specialised Defence Skills Centre of Excellence would allow for a more targeted approach to the development of skills within Defence industry. This Centre could be modelled on the proposed Australian Skills Centres of Excellence which were announced in the 2012-13 budget. These Centres are being established with the aim of supporting innovative production processes and teaching and learning methods in the vocational education and training (VET) sector.

The Defence Skills Centre of Excellence would operate as a virtual centre and commission high quality Registered Training Organisations (RTOs) and universities in key jurisdictions to deliver targeted, Defence-specific entry-level and post-trade training, and it would also drive increased investment in apprenticeships in Defence industry. It could be funded by the Australian Government with a co-contribution from industry. The Centre would be governed by a committee of senior representatives from Defence, Defence prime contractors, Defence SMEs, Industry Skills Councils (ISCs) and the education and training sector.

The Centre would be based on the engagement model developed by the South Australian Defence Teaming Centre (DTC). The DTC is an industry-funded body that facilitates collaboration between prime contractors and SMEs. The Defence Skills Centre of Excellence would include RTOs in this collaborative framework.

The Centre would also provide a workforce development advisory service. This service would provide a key source of high quality skills supply for Defence industry, and provide a focal point for workforce development in the industry. Staffed with experienced Defence industry personnel, the Centre would work with industry partners to embed work-based learning and ongoing staff development in organisational culture, and to drive effective skills utilisation by assisting staff at all levels to apply new learning, and managers to identify and plan for key skills gaps.

A key role for the Centre would be the appointment of a Group Training Organisation (seed funding from Defence) to administer and manage an apprenticeship program for Defence industry. Group Training Organisations (GTOs) employ Australian Apprentices, and hire them out to 'host employers'. GTOs serve an important purpose in the national training system as they enable employers to engage a third party to organise the administration and management of apprentices and trainees.

In the context of a downturn in procurement activity, the GTO appointed by the Defence Skills Centre of Excellence could commit to "over training" apprentices and trainees to meet projected future skill needs. Funding a GTO to employ and train more apprentices and trainees than currently required by Defence organisations will increase the general pool of skills available to the industry and provide an important surplus supply for future increases in demand for skills.

The GTO could also consider providing opportunities for apprentices to move between organisations as a strategy to retain skills through changes in projects. This approach allows apprentices and trainees to be utilised as a labour pool across the sector, and also provides the apprentices an opportunity to expand both their knowledge of the sector and their skills.

There are also opportunities to better engage ex-Defence personnel. Industry associations and ISCs, in collaboration with the Defence Skills Centre of Excellence, could support firms in Defence industry to access mature-age apprentices through the Australian Government funded National Apprenticeships Program. One of the target groups for this Program is ex-members of the ADF with trade-aligned skills. However, East Coast Apprenticeships, the Managing Organisation for the National Apprenticeship Program, has indicated that the take up of places by ex-Defence personnel has been low to this point. Low wage rates for apprentices relative to ADF wage rates may be a factor influencing these low take up rates.

Recommendation 5

That a Defence Skills Centre of Excellence be created to meet the skilling needs of Defence industry. The purpose of this Centre, which could operate as a virtual centre, would be to work with Defence and industry organisations to identify, develop and embed work-based learning and application of skills development across Defence industry.

The role of the Centre would include the appointment of a Group Training Organisation (funded by Defence) to administer/manage an apprenticeship program for Defence industry.

Recommendation 6

Industry associations and Industry Skills Councils, in collaboration with the Defence Skills Centre of Excellence, support firms in Defence industry to access mature-age apprentices through the Australian Government funded National Apprentices Program.

Scholarships, cadetships and work experience programs

In a demand-based higher education system, students will make course choices that do not necessarily line up with industry demand for specialised skills. Industry can support student engagement in niche skills areas by offering scholarships and cadetships as direct incentives. Scholarships and cadetships serve students well, as they link formal learning and development to employment outcomes.

The DMO and industry (through industry associations) could establish scholarship and cadetship programs for a range of specialist occupations. These could include engineers (including marine, systems and other engineering specialists), project managers, and relevant technician occupations and can be targeted at VET, undergraduate and post-graduate levels.

These programs need to be adequately supported through the use of work experience placements during the year, to ensure adequate transfer and application of the knowledge gained through the education programs. Industry associations should work with local industry organisations and the DMO to facilitate the placement of cadetship and scholarship recipients in series of rotations across multiple organisations, including a rotation in the DMO.

The Defence Engineering Internship Program could be used as the basis for these scholarship and cadetship programs. Third or fourth year engineering students are placed with SMEs that are currently or intend to be engaged in Defence industry and have 200 or less full time employees. The SMEs may hold industry relationships directly with Defence or may supply larger organisations that hold contracts with Defence.

In addition to scholarships and cadetships, a more concerted focus on work experience should form part of VET and undergraduate study programs. Graduate Careers Australia (GCA) recently identified that the use of undergraduate work programs (such as work experience placements, internships and vacation work) are methods by which companies, including those in Defence industry, can foster and develop graduate talent. They can also be used by employers as a tool to assess candidates prior to the commencement of their formal graduate recruitment campaigns.

In its engineering program accreditation process, Engineers Australia requires institutions to provide students with exposure to professional practice. But there is considerable variation in the quality of this provision between institutions, and the value derived from it by students (Watson and McIntyre, 2011: 37).

Education providers need to work more closely with industry to not only create work placement programs but to provide meaningful and relevant work experiences for the participants. Work experience programs need to be made available for both VET and undergraduate students to give them industry experience as part of their studies.

Recommendation 7

The DMO and industry (through industry associations) establish scholarship and cadetship programs for a range of specialist occupations at both undergraduate and post-graduate levels and relevant technician occupations.

These programs should be based on the structure and processes used within the Defence Engineering Internship Program.

Recommendation 8

Education providers and industry associations work with employers to create work placement programs which provide meaningful and relevant work experiences for students.

These work experience programs should be included in both VET and undergraduate programs to give students industry experience as part of their studies.

Recommendation 9

Industry associations work with local industry organisations and the DMO to facilitate the placement of cadetship and scholarship recipients in a series of rotations across multiple organisations, including a rotation in the DMO. These scholarship and cadetship opportunities should be supported by the broader marketing of careers in Defence industry.

Integrating project management skills into entry-level education and training

Recent engineering graduates report significant skills gaps in the areas of project management including documentation, writing, tendering, specification and user manuals, and in the area of human resource management. Although these skills are in demand in the workplace, a significant proportion of the engineering degree graduates report feeling unprepared in these areas (Watson and McIntyre, 2011: 39).

Industry associations should work in partnership with professional associations and education providers to examine the curriculum in VET and higher education programs to ensure that project management skills are included in engineering programs at the VET and undergraduate level.

Recommendation 10

Industry associations work in partnership with professional associations and education providers to examine the curriculum in VET and higher education programs to ensure that project management skills are included in engineering programs at the VET and undergraduate level.

4.2 Upskilling the existing workforce

A workforce development approach to skills development requires an ongoing commitment to skills development. Ensuring that staff are provided with opportunities to upgrade and develop skills is important for organisational capability, and these opportunities are also essential to career progression and individual development.

Upskilling also improves staff retention prospects. Robyn Wall, former Director of the DMO's Skilling Australia's Defence Industry Program, reflects this viewpoint in her comments to the *Australian Defence Magazine* (ADM, 2008):

It is pretty well known that if a workforce feels that management is taking an interest in them - that they are providing them with opportunities to skill, to train up - if they are actively seeking ways to keep them employed as opposed to 'oh we don't need that skill set anymore therefore we'll let you go,' that is a big retention benefit in itself. People stay where they are valued.

Evidence from the joint *DMO/Skills Australia Defence Major Contractors Survey* suggests that the majority of major contractors are investing in upskilling and reskilling. 71 per cent of respondents to the survey reported that they had invested in upskilling their existing workforce to address skills gaps related to recruitment difficulties. There is also evidence that Defence SMEs are engaging in upskilling existing workers. More than 90 per cent of businesses responding to the *Skills Australia SME Survey* reported that they utilised formal and/or on-the-job learning to upskill existing staff.

As mentioned earlier, the proposed Defence Skills Centre of Excellence would provide a focal point for skills development for Defence industry. This Centre would increase the specialisation of entry-level training for Defence Industry, and it would also provide a vital resource for the upskilling of the existing workforce, including the post-vocational skills required by tradespersons and technicians.

For the professions, the DMO delivers a range of skills programs that support organisations to engage staff in postgraduate degrees. These programs play a vital role in supporting organisations to engage staff in highly specific and expensive postgraduate courses, but a number of improvements could be made to these programs.

Aside from the importance of specialised upskilling training for tradespersons, technicians and professionals, the importance of generic or "soft" skills should not be underestimated. In particular, the engagement of future leaders in leadership and project management programs is particularly important to organisational development and succession planning. It is therefore recommended that Defence adopt a concerted focus on upskilling existing workers in project management skills.

Specialised post-vocational education and training

The proposed Defence Skills Centre of Excellence would provide an excellent coordination point for post-vocational and technician training requirements. The Centre could commission RTOs to develop specialised post-trade training courses on behalf of organisations seeking to upskill a cohort of workers to meet a new capability requirement. The Skills Centre could also fulfil a promotional role on behalf of RTOs by informing industry of high quality training offerings related to specific skills requirements. It could also utilise programs such as the National Workforce Development Fund, which was established as a co-contribution fund to skill existing and new workers, as well as to improve productivity through improved alignment of skills and workplaces.

Recommendation 11

The proposed Defence Skills Centre of Excellence support the upskilling of tradespersons and technicians in each jurisdiction through:

- the identification and scoping of Defence industry requirements for post-vocational training,
- outsourcing the delivery of training programs to suitably qualified education and training providers, and
- ensuring that the supply of skills matches the needs of industry through programs such as the National Workforce Development Fund.

Improve the effectiveness of existing Defence industry skilling programs

The DMO offers funding for skills development to industry under the Industry Skilling Program Enhancement (ISPE) and the Skilling Australia's Defence Industry (SADI) Program.

We acknowledge the work that the DMO has undertaken and continues to undertake to improve the administration of the skilling programs it offers to support industry. In addition, the DMO is currently undertaking an assessment of the industry support programs against those offered by the Commonwealth and State and Territory governments to identify areas of possible duplication.

We believe there are opportunities to refocus existing DMO supported skills programs to ensure they better meet the skilling needs of Defence industry. These opportunities are detailed below.

Improved administration

The administrative processes related to the ISPE and SADI programs could be improved. Little evidence is available of detailed planning and administrative process in key areas such as performance measurement, risk management, strategy and planning mechanisms. The DIST should be providing greater direction and advice on planning, strategy and accountability mechanisms for these programs.

Performance evaluation

It appears that the current skilling programs offered by the DMO suffer from a lack of longitudinal evaluation processes or strategies in place to assess the effectiveness of these programs. The lack of these mechanisms for either SADI or ISPE means that the DMO and Government are not in a position to determine when success is achieved in these programs and whether they have provided value for money. The DMO should undertake performance evaluations of SADI and all ISPE programs to determine whether the programs have achieved their objectives since their implementation.

Measurable Key Performance Indicators and reporting requirements should be developed for all ISPE programs. Performance measures and reporting requirements should also be incorporated into SADI funding agreements.

Recommendation 12

The DMO undertake more detailed performance evaluations of SADI and all ISPE programs to determine whether the programs have achieved their objectives since their implementation.

Recommendation 13

The DMO develops measurable Key Performance Indicators and reporting requirements for all ISPE programs, where feasible.

Recommendation 14

The DMO incorporates performance measures and reporting requirements into SADI funding agreements.

Scope of SADI programs

We note the work that DMO has undertaken to implement the recommendations from the KPMG review of SADI, including changes to the funding rounds and the implementation of a grants management system in 2012. DMO should continue to implement the recommendations arising from the November 2011 KPMG evaluation of the SADI program.

However, there are additional changes which can be made to the scope of SADI which would make it a more effective skilling support arrangement for industry and provide a greater degree of certainty of funding for training activities, including:

- Funding approvals should be extended for longer than a financial year, especially where longer term training (such as full qualifications) is being undertaken.
- The scope of SADI funded programs needs to be expanded to include management and leadership training activities where industry has identified skill deficits.
- DMO should accept SADI funding applications from third parties representing Defence industry, such as Group Training Organisations and industry associations, to enable these organisations to manage and administer training on behalf of SMEs in the industries.

Recommendation 15

The DMO consider making additional changes to the SADI program, including:

- Extending funding approvals for longer than a financial year, especially where longer term training (such as full qualifications) is being undertaken.
- Expanding the scope of SADI-funded programs to include management and leadership training activities where industry has identified skill deficits.
- The DMO accepting SADI funding applications from third parties representing Defence industry, such as Group Training Organisations and industry associations, to enable these organisations to manage and administer training on behalf of SMEs in the industries.

Upskilling the existing workforce in project management skills

Stakeholders commented that education and training in project management is best carried out at the post-graduate level, particularly for those projects of a complex nature. This level of education is targeted at those members of Defence industry who have already obtained some experience in undertaking or managing projects.

There are a number of post-graduate programs offered by the tertiary sector and available to industry across Australia. Feedback from stakeholders indicated that one of the best regarded project management courses in Australia is the Executive Masters in Complex Project Management offered by the Queensland University of Technology (QUT) (the training costs can be supported by the DMO through the SADI program).

While industry feedback on this Masters course is very positive, the course requires participants to undertake three months of intensive coursework, which limits the numbers of senior managers who can complete the course. This is made more problematic given that the course is based in Queensland, which reduces the opportunity for participation from companies in other regions.

The DMO should consider the expansion of this program by developing partnership arrangements between QUT and universities in other regions (such as WA) to allow industry organisation which cannot afford to send personnel to Queensland an opportunity to access the program.

Project management skills are also important for trades and technicians. We believe that the development of trade and post-trade qualifications in project management specific to Defence industry should also be considered.

Recommendation 16

The DMO and industry (working through industry associations) jointly support the provision of accredited training through a targeted scholarship program at vocational and post graduate levels.

Recommendation 17

The DMO develop partnership arrangements between QUT and other universities to allow industry organisations who cannot afford to send personnel to Queensland to undertake the Executive Masters in Complex Project Management Masters offered by QUT an opportunity to access the program.

4.3 Retention of specialist skills

The single most important challenge to retaining a skilled Defence industry workforce is the lack of a steady work program for many companies. Ebbs and flows in procurement impact on job satisfaction, and the ability of firms to provide competitive compensation and career paths. Smoothing out the gaps between acquisition projects would provide significant support to firms in developing and retaining skilled workforces.

Respondents to the *Skills Australia/DMO Major Contractors Survey* were asked to identify the employee turnover within their organisation. All respondents experienced some labour turnover over the past three years. Employee turnover within Defence industry has remained relatively stable over the three years to 2011, with respondents reporting an average of 12.9 per cent in 2010-11 for turnover in Defence industry (see Table 16 in **Appendix D**). However, given the constraints which will occur as a result of the 2012-13 Commonwealth Budget, it is not clear if these retention rates will remain at similar levels over the Forward Estimates.

A number of policy processes are in place to review the performance of Defence's procurement process, including the current Senate Inquiry into procurement procedures for Defence capital projects. Work is also underway to consider improvements to the sequencing of procurements in the naval shipbuilding industry. The terms of reference for the Future Submarine Industry Skills Plan include a commitment to:

propose alternate scenarios for sequencing Defence projects that will better deliver the capacity and capability required to successfully deliver the Future Submarine Project.

The retention of specialist skills and Australian industry capability is not the primary objective of Defence procurement. As stated in 2010 Defence Industry Policy Statement, the strategic requirements of the ADF drive investment priorities, and the Australian Government will always seek to achieve the best value for money when making decisions to acquire new ADF capabilities. The best value for money decision does not always support investment in Australian industry, especially in relation to acquisition expenditure, where DMO estimates indicate that only 37 per cent of total expenditure will be spent on domestic activity over the next decade.

Nonetheless, there are a number of strategies that can be employed to improve certainty for Australian industry and by extension, support skills retention in the industries.

- First, the forthcoming Defence Industry Policy Statement due in 2013 should include an accompanying Skills Development Plan.
- Second, Defence can make greater use of Minor Capital Projects to assist organisations to retain skilled workers during delays in procurement decisions.

However, the responsibility for skills retention does not rest solely with the Australian Government. Organisations in Defence industry can also introduce strategies to improve skills retention. In particular, a systemic approach to skills matching between the resources and Defence sectors is required to ensure that workers in the resources sector with crossover skills sets can be identified, mapped and potentially transferred between sectors.

Improving certainty for industry

A new Defence Industry Policy Statement and Industry Skills Development Plan

The 2010 Defence Industry Policy Statement includes reference to skills but does not include a comprehensive assessment or description of the skills required to boost the capacity of Australian industry to compete for Defence procurement contracts.

The forthcoming Statement should include a separate Defence Skills Development Plan that outlines the overarching policy framework for the DMO skilling programs and links this policy framework to the Priority Industry Capabilities (PICs) and Strategic Industry Capabilities (SICs).

Recommendation 18

Defence consult with Defence industry to develop a comprehensive Industry Skills Development Plan. The purpose of this Plan would be to highlight the capability development priorities for Australian industry over the forward procurement period and link it back to Defence strategic industry policy.

Greater use of Minor Capital Projects

One of the options identified during the submission process to reduce the loss of workforce knowledge and skills when the DCP slips to the right is greater use by Defence of Minor Capital Projects. These projects, managed through the three Services, are part of Defence's capital equipment investment program but are not large enough in monetary value to be classified as major projects. Generally, Minor Capital Projects have an overall cost of less than \$20 million.

Cirrus Real Time Processing Systems provides a good example of how these minor projects can assist companies to retain skilled staff. They also utilise a 'learning by doing' philosophy in order to train their staff.

Case study - Cirrus Real Time Processing Systems

To be successful in delivering major projects identified in the DCP, companies must have specialist skills and expertise. Often, companies risk losing these skills during project downtimes. One option employed by Cirrus Real Time Processing Systems to maintain and increase specialist skills is participation in Minor Capital Projects, which allows staff to develop skills through a 'learning by doing' process.

Recently, Air Force Minor project 1002 (AFM1002) was raised by Defence to deliver an interim Air Combat Officer Training System. This project was an interim measure put in place prior to the commencement of a similar major project, which Cirrus anticipated playing a lead role in completing.

Facing the prospect of skills deterioration and loss of expertise, Cirrus took the opportunity to participate in the minor project prior to the commencement of the major project. Through participating in the minor project, the engineering workforce at Cirrus was engaged in 'learning by doing', which saw these workers complete practical learning tasks in the key technology areas critical to the delivery of the major project.

The minor project meant that the interim training system was delivered to RAAF on time and on budget. Cirrus not only maintained a skilled workforce, but acquired new skills and knowledge which could be put to use in the delivery of the major project.

In order to overcome procurement gaps, Defence should consider the greater use of the Minor Capital Project arrangement to commission projects to address the need for skills development and maintenance in those areas where there is likely to be significant future need. These projects will provide Defence the opportunity to obtain a version of the required capability and bring it into service sooner rather than later, while allowing industry the opportunity to develop skills which can be used later on major projects.

Recommendation 19

Defence consider whether the Minor Capital Project arrangement can be utilised to commission projects to address the need for skills development and maintenance in those areas where there is likely to be significant future need.

Skills matching between the resources and Defence sectors

In the consultations conducted for this Strategy, many attendees noted competition for skills from the resources sector. In Western Australia (WA) in particular, high demand for skilled workers from the resources sector has made it difficult for Defence firms to pay competitive wages, particularly to electrical and mechanical engineers. The resources sector is also growing in South Australia and Defence industry is struggling to compete for wages.

The poaching of staff with specialist skills impacts heavily on Defence organisations - it is not just about replacing individuals, but replacing discrete capabilities that comprise a degree of corporate and professional knowledge.

However, the intensity of skills demand from the resources sector could also create opportunities for Defence industry. In the Discussion Paper, we identified that peak demand for construction skills in the resources sector will occur before the peak in skills demand for planned Defence acquisitions. This provides the potential for significant supplies of skilled labour in key skill areas to become available from the resources sector as stages of major projects are completed.

In 2011, the resource sector employed more workers aged 25 to 44 years than other industries, with over half the workers in mining (54.1 per cent), compared with 44.6 per cent for all industries (DEEWR, 2011:4). Anecdotal evidence obtained during the consultations with industry suggest that resource sector workers spend an average of two-three years in the industry and there appear to be increasing numbers of workers who are lasting less than 12 months in the industry. If this is the case, this provides ongoing opportunities for skills supply to the Defence sector.

However, there is a need for a systemic approach to the matching of skills between the resources and Defence sectors, so that the crossover skills sets can be identified, mapped and potentially transferred between sectors.

Defence should give consideration to developing a skills exchange in conjunction with relevant peak industry councils in the resources sector to identify individuals who may have an interest in working in Defence industry on the completion of resources related projects.

To present employment in Defence industry as a viable alternative to resources sector employment, we suggest that Defence industry associations should actively promote the substantial future employment opportunities related to projects such as the Future Submarine Program.

Defence industry associations should promote employment opportunities in the naval shipbuilding industry to workers in the resources sector, particularly welders, electronics technicians and project managers and schedulers. Individuals who register interest in these opportunities should be assessed for skills and knowledge gaps.

To support those workers with specialist skills who wish to move into in submarine construction (such as welders, electronics technicians and project managers and schedulers), we suggest that Defence develop a list of key crossover skills between the sectors and map current skills against skills required for discrete submarine design and construction roles. The gap in skills could inform training development plans for workers looking to move into the naval shipbuilding industry, including submarines.

Defence should work with industry associations to support the training and skills development required for skilled workers in the resources sector to transition effectively to employment in the naval shipbuilding industries, including submarine construction.

Recommendation 20

Defence develop a skills exchange in conjunction with the relevant peak industry councils in the resources sector to identify those who may have an interest in working in Defence industry on completion of resources sector projects.

Recommendation 21

Defence industry associations promote employment opportunities in the naval shipbuilding industry to employees in the resources sector, particularly welders, electronics technicians and project managers and schedulers, register interest in these opportunities, and assess skills and knowledge gaps.

Recommendation 22

Defence work with industry associations to support the training and skills development required by skilled workers in the resources sector to transition effectively into employment in the naval shipbuilding industries, including the submarine enterprise. This may include funding bridging courses to assist skilled workers in the resources sector, including welders, electronics technicians and project managers and schedulers, to transition effectively to employment in the naval shipbuilding industries, including the submarine industry.

4.4 Policy drivers to improve skills supply

This key theme addresses policy recommendations for the Australian Government that are required to provide the best environment for the attraction, retention and growth of skills in the Australian Defence industry.

First, a number of changes to initiatives administered by Defence are recommended. These include changes to the role of the Defence and Industry Skills Taskforce (DIST), the integration of a skills assessment into the Priority Industry Capability Health Check process, and the improved recognition of qualifications for ex-ADF personnel.

Second, changes to the administration of industry support programs across government are recommended. In particular, a more transparent, consistent approach to Defence industry support programs across government is required.

Changes to Defence policy

Role of the Defence and Industry Skills Taskforce (DIST)

The DIST was established in 2010 through the Defence Industry Policy Statement (Defence, 2010: 104) to provide advice, analysis, ideas and strategies with particular reference to:

- ensuring a critical mass of skills relevant to the Defence sector,
- identifying and growing the skills to deliver and sustain the ADF's capabilities and equipment as detailed in the Defence White Paper and DCP, and
- building the skills required in Defence and Defence industry to deliver the Defence Strategic Reform Program.

The DIST currently consists of representatives from Defence including the DMO, other government departments, Defence industry, industry associations and unions and reports to the Defence Industry Innovation Board.

The current membership of the DIST provides both Defence and Defence industry with the potential to provide significant strategic direction for the considerable inroads into the skilling requirements for the Defence sector. However, it currently appears to operate only as an advisory body, rather than a decision-making forum. This lack of authority limits its reach and influence in both Defence and Defence industry and subsequently its overall purpose.

It appears that the role of the DIST needs to be strengthened and its responsibilities clarified. Defence needs to re-examine the role of the DIST in light of the recommendations made in this Report.

Recommendation 23

Defence re-examine the role of the DIST in light of the recommendations made in this Report to strengthen its roles and responsibilities.

PIC Health Checks

To date much work which has been undertaken to align the PICs more fully to the DCP and the future work program, including the PIC Health Checks. Defence has started to inform industry of the work to date and the work still to be undertaken.

Work still to be undertaken includes:

- Improved alignment between the SICs, PICs and Defence investment in workforce development (particularly through the SADI program). In its submission, the ASC notes that more comprehensive "*PIC and SIC specific guidance would allow ASC to better compensate for the long lead times associated with the development of a workforce to meet future needs.*"
- A specific focus on skilling issues in the PIC Health Check process. Currently, the PIC Health Check Framework does not include a separate or specific consideration of skilling issues within the PIC, unless these issues are raised within the 'Industry Background' section of the Framework. If the Health Checks reveal a problem related to skills development, a detailed assessment of these issues is undertaken. However, the Framework does not include a specific assessment of the skills base available to support PICs, nor does it include mandatory assessments of workforce skills development requirements.

The inclusion of a mandatory skills assessment in all PIC Health Checks would improve the capacity of Defence procurement to support the development and maintenance of these capabilities. The lack of a mandatory consideration for this issue allows for the potential for workforce skilling requirements to be missed within the Health Check.

Recommendation 24

Defence continue to develop the PIC Health Check Framework to include specific consideration of skilling issues within the PIC. This consideration is also to include assessment of the skills base available to support PICs and mandatory assessments of workforce skills development requirements.

Recognition of qualifications of ex-ADF personnel

The consultation and submission process undertaken to develop this Strategy suggests that there is a perception in the broader Defence industries that ADF personnel are not receiving nationally recognised qualifications as part of their training in the ADF. As one attendee (ex-ADF) stated, *'Members walk away from the ADF with nothing'*.

A significant issue is the expectation that members and ex-members of the ADF make formal requests to obtain their statements of attainment and certificate-level qualifications. Information is provided to personnel as part of their transition seminar and is included in the ADF Career Transition Manual. However, this does not assist those members who have not attended a Career Transition Seminar, but would like to obtain their statements of attainment or qualifications for other reasons (for example, to pursue future education prospects in VET/Higher education).

There is a need to provide a greater level of information to Defence personnel about how their qualifications can be obtained, particularly for those personnel who have left Defence, do not have regular access to the Defence Restricted Network, or are unfamiliar with Service policy. Ensuring that Defence personnel have received the qualifications/statements of attainment for which they have studied and been assessed will ensure that they do not have to go through costly Recognition of Prior Learning (RPL) or assessment processes. This will also enable industry to have a greater understanding of the skills available in the ex-Defence workforce.

Defence should therefore undertake a marketing campaign (through career transition seminars, Defence industry associations, RSLs and other groups) to advise both current and ex-ADF personnel about the existence and utilisation of the www.defencequals.edu.au database.

There also needs to be greater information made available to ADF personnel about how the qualifications or statements of attainment they have obtained during their career can be aligned to civilian qualifications.

Defence Service RTOs need to ensure that ADF personnel are provided with their statements of attainment/qualification(s) on completion of any nationally accredited training program provided by that Service and record this information in the Defence HR Management Information System. Given that personnel records from the Defence HR Management Information System are those that are given to ADF personnel on discharge, Service RTOs need to ensure that units of competency and qualifications are recorded against Service training courses in this System.

As part of the career transition process for ADF personnel, Career Transition Centres and the Service RTOs should map the ADF qualifications of members to civilian qualifications, and identify strategies to fill any gaps required for separating ADF personnel to secure civilian employment.

Recommendation 25

Defence undertake a marketing campaign (through career transition seminars, Defence industry associations, RSLs and other groups) to advise both current and ex-ADF personnel about the existence and utilisation of the www.defencequals.edu.au database.

Recommendation 26

Defence develop and implement a communication strategy to advise ADF personnel how the qualifications or statements of attainment they have obtained during their career can be aligned to civilian qualifications.

Recommendation 27

Defence Service RTOs ensure that ADF personnel are provided with their statements of attainment/qualification(s) on completion of any nationally accredited training program provided by that Service and record this information in the Defence HR Management Information System.

Recommendation 28

Service RTOs ensure that units of competency and qualifications are recorded against Service training courses in Defence HR Management Information System.

Changes to the administration of Australian Government industry support programs

Government industry support programs

A range of industry support programs are offered by the Commonwealth, State and Territory governments. The Commonwealth Department of Innovation, Industry, Science, Research and Tertiary Education (DIISRTE) currently maintains Business.gov.au and the Grantfinder tool which provide information on relevant industry support programs to all businesses. This tool relies on input from other agencies to maintain currency.

The KPMG report for the DMO identified little overlap between the support programs offered by the DMO and other Commonwealth, State and Territory programs. The plethora of programs available to industry more broadly and Defence industry in particular makes it problematic for industry to identify and access the programs appropriate for their requirements.

The DIST has directed that a study be undertaken to identify what programs at Commonwealth, State and Territory level are comparable or similar to the 14 programs undertaken within ISPE. This project was completed in June 2012.

The data gathered by the DMO in the above study could be incorporated into the existing Business.gov.au Grantsfinder tool.

In addition, better communication and marketing of these activities to SMEs also needs to be developed. During the consultations, a number of SMEs indicated their lack of awareness of the programs offered by Defence and the availability of the broader range of assistance programs offered by either the Commonwealth or State/Territory governments.

A communication and marketing campaign needs to be developed by the DMO, with the Defence Industry Innovation Centre and state Defence industry associations to increase awareness of the industry and skilling assistance programs available to Defence industry from Commonwealth, State and Territory governments.

Recommendation 29

The data gathered by the DMO in their study of ISPE programs be used to enhance the DIISRTE-maintained Business.gov.au Grantfinder tool to continue to support easier access to information about the current assistance available to industry.

Recommendation 30

The DMO, with the Defence Industry Innovation Centre and state Defence industry associations, develop a communication and marketing campaign to increase awareness of the industry and skilling assistance programs available to Defence industry from Commonwealth, State and Territory governments.

4.5 Improving management capability related to Workforce Development

A vital component of productivity improvement in Defence industry is the development and utilisation of workforce skills. Effective leadership, governance and management are required to assist individual businesses to improve performance in their workplaces. As a result of its research on skills utilisation in a number of Australian organisations, we believe that when employees feel that their skills are being used and their talent is nurtured, it pays dividends in business efficiency, productivity and innovation (Skills Australia, 2012).

As discussed at the beginning of this Chapter, the concept of workforce development is already embedded in the planning frameworks of organisations involved in Defence acquisition and sustainment.

However, we acknowledge that some organisations may not have the management capacity or capability to fully assess workforce skills and capabilities or to implement actions which could improve these skills and capabilities. To assist these organisations, a number of services are already provided by Commonwealth Government, industry skills councils, peak bodies and professional associations to assist organisations to assess the strategic issues and provide options for future growth and development (Skills Australia, 2012: 28). In particular, the Defence Industry Innovation Centre was established as part of the DIISRTE Enterprise Connect program to provide assistance to Defence industry.

It is proposed that Defence require all organisations to submit workforce development plans as part of the tender submission process. The Innovation and Business Skills Australia (IBSA) Workforce Innovation Survey Tool, which was developed in partnership with the Australian Human Resources Institute and the Department of Education, Employment and Workplace Relations, provides a good model to assist organisations with these plans.

To assist organisations to build the management capability to undertake these workforce assessments and workforce development plans, it is recommended that the Defence Industry Innovation Centre work with Defence organisations, particularly SMEs, to assess any gaps in management capability.

Workforce Development Plans

In order to improve workforce planning and development in Defence industry, workforce development plans should form a mandatory component of tender submission requirements. Through these plans, organisations should be required to demonstrate that they have robust strategies and mechanisms in place to recruit, train and retain specialist workers.

As a first step, industry associations should encourage organisations to complete the IBSA Workforce Innovation Survey Tool. The Tool, available at <http://innovationtool.ibsa.org.au/organisations.html>, is a free capability assessment device that enables organisations to assess the innovation capacities of employees, and examine the fit between these capacities and the requirements of job functions. The Tool encourages individuals to assess their own capacities, and assists employers and HR managers to identify skills and capability gaps and to consider approaches to matching the right people with the right jobs, and/or redesigning certain job functions.

Improvement of Management Capability within Defence industry

In line with the above points, the DIST and the Defence Industry Innovation Centre should work together to develop strategies to address any gaps in management capability that may inhibit the creation of workforce development plans.

Recommendation 31

Defence require all organisations to submit workforce development plans as part of the tender submission process.

Recommendation 32

Industry associations encourage organisations in Defence industry to use the Innovation and Business Skills Australia (IBSA) Workforce Innovation Survey Tool to assess workforce capabilities and capacities.

Recommendation 33

The Defence Industry Innovation Centre work with organisations to develop strategies to address any gaps in management capability that may inhibit the creation of workforce development plans.

5 Recommendations

Key Theme 1: Improving the attraction and recruitment of critical skills

Recommendation 1.1

To raise the profile of Defence as a career option and enable students to understand pathways to Defence industry, industry associations work in conjunction with secondary schools to develop and implement a national program providing school students with 'tasters' relevant to careers in Defence industry. This program could be modelled on the 'Try a Trade' initiatives currently operating.

Recommendation 1.2

Defence Prime Contractors make key industry personnel available to visit schools, talk about their career pathways and promote career opportunities in Defence industry.

Recommendation 2

The Australian Submarine Corporate, state and territory governments and relevant peak organisations position SEA 1000 as a promotional vehicle for employees with science and engineering skills by developing a set of pathway models for key occupations in the design, construction and sustainment of submarines, and promoting these models through the 'tasters' and school visits proposed above. Other flagship programs, including SEA 1180 – the Offshore Combatant Vessels program – should also be earmarked for this type of promotion.

Recommendation 3

To avoid duplication of effort, Defence liaise with the Office of the Chief Scientist to assess the programs currently being offered to encourage STEM study in schools. This assessment needs to identify the region in which the programs are being run, the target population, the skills being targeted and developed, the industry/education partnership arrangements, and the evidence available to determine the impact of the program on students' choices for future study and careers.

If this data collection process identifies the need for new programs, communication and marketing campaigns should be developed between the DMO and industry associations to demonstrate the value of careers in Defence industry to schoolchildren and their parents, as well as the broader community.

Recommendation 4

Defence (through the DIST) work with industry and State education authorities to determine whether the Queensland Aerospace Project could be duplicated across regions, focusing on other aspects of Defence industry (such as the maritime sector).

Recommendation 5

That a Defence Skills Centre of Excellence be created to meet the skilling needs of Defence industry. The purpose of this Centre would be to work with Defence and industry organisations to identify, develop and embed work-based learning and application of skills development across Defence industry.

The role of the Centre would include the appointment of a Group Training Organisation (funded by Defence) to administer/manage an apprenticeship program for Defence industry.

Recommendation 6

Industry associations and Industry Skills Councils, in collaboration with the Defence Skills Centre of Excellence, support firms in Defence industry to access mature-age apprentices through the Australian Government funded National Apprentices Program.

Recommendation 7

The DMO and industry (through industry associations) establish scholarship and cadetship programs for a range of specialist occupations at both undergraduate and post-graduate levels and relevant technician occupations.

These programs should be based on the structure and processes used within the Defence Engineering Internship Program.

Recommendation 8

Education providers and industry associations work with professional associations to create work placement programs which provide meaningful and relevant work experiences for students.

These work experience programs should be included in both VET and undergraduate programs to give students industry experience as part of their studies.

Recommendation 9

Industry associations work with local industry organisations and the DMO to facilitate the placement of cadetship and scholarship recipients in a series of rotations across multiple organisations, including a rotation in the DMO. These scholarship and cadetship opportunities should be supported by the broader marketing of careers in Defence industry.

Recommendation 10

Industry associations work in partnership with professional associations and education providers to examine the curriculum in VET and higher education programs to ensure that project management skills are included in engineering programs at the VET and undergraduate level.

Key Theme 2 - Upskilling the existing workforce

Recommendation 11

The proposed Defence Skills Centre of Excellence support the upskilling of tradespersons and technicians in each jurisdiction through:

- the identification and scoping of Defence industry requirements for post-vocational training,
- outsourcing the delivery of training programs to suitably qualified education and training providers, and
- ensuring that the supply of skills matches the needs of industry through programs such as the National Workforce Development Fund.

Recommendation 12

The DMO undertake more detailed performance evaluations of SADI and all ISPE programs to determine whether the programs have achieved their objectives since their implementation.

Recommendation 13

The DMO develop measurable Key Performance Indicators and reporting requirements for all ISPE programs, where feasible.

Recommendation 14

The DMO incorporate performance measures and reporting requirements into SADI funding agreements.

Recommendation 15

Defence consider making additional changes to the SADI program, including:

- Extending funding approvals for longer than a financial year, especially where longer term training (such as full qualifications) is being undertaken.
- Expanding the scope of SADI-funded programs to include management and leadership training activities where industry has identified skill deficits.
- The DMO accepting SADI funding applications from third parties representing Defence industry, such as Group Training Organisations and industry associations, to enable these organisations to manage and administer training on behalf of SMEs in the industries.

Recommendation 16

The DMO and industry (working through industry associations) jointly support the provision of accredited training through a targeted scholarship program at vocational and post graduate levels.

Recommendation 17

The DMO develop partnership arrangements between QUT and other universities to allow industry organisations who cannot afford to send personnel to Queensland to undertake the Executive Masters in Complex Project Management Masters offered by QUT an opportunity to access the program.

Key Theme 3: Retention of specialist skills

Recommendation 18

Defence consult with Defence industry to develop a comprehensive Industry Skills Development Plan. The purpose of this Plan would be to highlight the capability development priorities for Australian industry over the forward procurement period and link it back to Defence strategic industry policy.

Recommendation 19

Defence consider whether the Minor Capital Project arrangements can be utilised to commission projects to address the need for skills development and maintenance in those areas where there is likely to be significant future need.

Recommendation 20

Defence develop a skills exchange in conjunction with the relevant peak industry councils in the resources sector to identify those who may have an interest in working in Defence industry on completion of resources sector projects.

Recommendation 21

Defence industry associations promote employment opportunities in the naval shipbuilding industry to employees in the resources sector, particularly welders, electronics technicians and project managers and schedulers, register interest in these opportunities, and assess skills and knowledge gaps.

Recommendation 22

Defence work with industry associations to support the training and skills development required by skilled workers in the resources sector to transition effectively into employment in the naval shipbuilding industries, including the submarine enterprise. This may include funding bridging courses to assist skilled workers in the resources sector, including welders, electronics technicians and project managers and schedulers, to transition effectively to employment in the naval shipbuilding industries, including the submarine industry.

Key Theme 4 - Policy drivers to improve skills supply

Recommendation 23

Defence re-examine the role of the DIST in light of the recommendations made in this Report to strengthen its roles and responsibilities.

Recommendation 24

Defence continue to develop the PIC Health Check Framework to include specific consideration of skilling issues within the PIC. This consideration is also to include assessment of the skills base available to support PICs and mandatory assessments of workforce skills development requirements.

Recommendation 25

Defence undertake a marketing campaign (through career transition seminars, Defence industry associations, RSLs and other groups) to advise both current and ex-ADF personnel about the existence and utilisation of the www.defencequals.edu.au database.

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Recommendation 28

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The data gathered by the DMO in their study of ISPE programs be used to enhance the DIISRTE-maintained Business.gov.au Grantfinder tool to continue to support easier access to information about the current assistance available to industry.

Recommendation 30

The DMO, with the Defence Industry Innovation Centre and state Defence industry associations, develop a communication and marketing campaign to increase awareness of the industry and skilling assistance programs available to Defence industry from Commonwealth, State and Territory Governments.

Key Theme 5 - Improving management capability related to Workforce Development

Recommendation 31

Defence require all organisations to submit workforce development plans as part of the tender submission process.

Recommendation 32

Industry associations encourage organisations in Defence industry to use the Innovation and Business Skills Australia (IBSA) Workforce Innovation Survey Tool to assess workforce capabilities and capacities.

Recommendation 33

The Defence Industry Innovation Centre work with organisations to develop strategies to address any gaps in management capability that may inhibit the creation of workforce development plans.

Appendices

Appendix A: Terms of Reference - Australian Defence Industry Workforce Strategy

The Minister for Defence Materiel has requested Skills Australia to work with the Defence and Industry Skills Taskforce (DIST) to map out the range and depth of the skills sets in Defence industry and the skills that will be needed over the next ten years and beyond. The study will look at how best to build these skills, having regard to the various Defence assistance programs available and how these might best be shaped or changed to offer value-for-money into the future.

Skills Australia will provide a comprehensive Defence industry workforce strategy. The aim is to assist in better positioning Australia's Defence industry to fully participate in opportunities for Australian Government Defence procurements through the availability of an appropriately skilled workforce. This paper will be presented to the Defence Industry Innovation Board.

The task will include developing a comprehensive workforce development plan taking into account trends in Defence procurement and the supply of and demand for skills to meet Australia's Defence procurement needs. This will include:

- examining planned Defence major equipment acquisitions and major sustainment over the next ten years, mapping the proposed timing and sequencing of major Defence acquisitions (i.e. projects in the public Defence Capability Plan) with the aim of generating labour and skills projections to meet these needs, including estimating the number and types of jobs likely to be generated from the Defence acquisitions program, the skills and quantity needed, when workers will be required, and identifying what skills needs can currently be met;
- analysing the expected supply of skilled labour from all sources and the resulting labour or skills gaps. This work would build on industry skills surveys already undertaken (such as for the mining industry in late 2008) and state skills plans;
- analysing existing Defence skilling and training assistance programs and recommending any changes to best help meet skills demands; and
- identifying existing education and training sector capacity, and the potential for up-skilling or multi-skilling through modified, innovative and accelerated trades and engineering qualification pathways.

20 September 2011

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Appendix C - Acronyms and Terminology

Acronyms

A	
ADF	Australian Defence Force
ASC	Australian Submarine Corporation
D	
DCP	Defence Capability Plan
DIISRTE	Department of Industry, Innovation, Science, Research and Tertiary Education
DIST	Defence and Industry Skills Taskforce
DMO	Defence Materiel Organisation
DTC	Defence Teaming Centre
I	
ISPE	Industry Skilling Program Enhancement
IT	Information Technology
M	
ME	Manufacturing and Education
MEMiS	Maritime Engineering Maths in Schools
N	
NBN	National Broadband Network
NSW	New South Wales
NT	Northern Territory
P	
PIC	Priority Industry Capabilities
Q	
QUT	Queensland University of Technology
R	
RAAF	Royal Australian Air Force
RAN	Royal Australian Navy
REA	ReEngineering Australia
RPL	Recognition of Prior Learning
RSL	Returned Services League

RTO	Registered Training Organisation
S	
SA	South Australia
SADI	Skilling Australia's Defence industry
SIC	Strategic Industry Capabilities
SIDC	Schools Innovation Design Challenge
SME	Small and Medium Enterprises
STEM	Science, technology, engineering and mathematics
T – U	
TAFE	Training and Further Education
UK	United Kingdom
US	United States of America
V – W	
VET	Vocational Education and Training
WA	West Australia

Terminology

Acquisition	The procurement or purchase of materiel required to support and maintain capability.
Capability	The combination of military equipment, personnel, logistics support, training, resources, etc. that provides Defence with the ability to achieve its operational aims.
Defence	Department of Defence.
Materiel	The equipment, including aircraft, ships, vehicles, electronic systems, uniforms and rations, required to support military capability.
Sustainment	The support of a system, platform or item (including maintenance, upgrades, fuels, explosive ordnance and spares) until it is no longer required or able to be kept in service.

Appendix D – Survey analysis

Introduction

This Appendix provides an overview of the key findings emerging from two industry surveys undertaken by Skills Australia in collaboration with the DMO to inform this report.

As noted in the Discussion Paper, there is a dearth of national labour market data relating to Defence industry. Australia's Defence industry spans a number of industry classifications and as such is not accurately captured by Australian Bureau of Statistics labour force data and it is difficult to quantify key labour force characteristics.

To provide a strong evidence base for the Strategy, Skills Australia undertook two industry surveys to gauge a range of key workforce and labour force characteristics.

The *DMO/Skills Australia Major Contractors Survey* was conducted in conjunction with the DMO, whose administrative data and industry intelligence was used to choose 49 firms to participate in the survey.

The second survey, *the Skills Australia SME Survey*, approached a sample of firms registered on the Defence *ePortal* that deliver an identified Priority Industry Capability (PIC) or a Strategic Industry Capability (SIC).

Key findings

The surveys conducted by the DMO and Skills Australia provide a useful insight into the labour and skills requirements of Defence industry. While the findings are constrained by the small response rate to both surveys, the responses demonstrate some clear and consistent concerns around skills imbalances, key skills requirements and recruitment needs. These concerns are reflected in the recommendations provided in the Main Report.

Workforce Profile

The *DMO/Skills Australia Major Contractors Survey* identified the total employment within the surveyed companies to be 17 353 workers. The largest percentage of workers employed by the surveyed companies worked in South Australia, with 3 906 workers (32 per cent) employed in the State, while Tasmania had the least numbers of workers with less than ten workers identified in the survey.

Most workers were between the ages 35-44 (5 361 employees or 29 per cent of workforce), followed by 45-54 years of age with 5 222 workers (28 per cent). The relatively high proportion of workers in the 45-60 age bracket (3 142 employed or 17 per cent of the workforce) may be of some concern for Defence industry in the future, given the level of corporate knowledge and experience generally possessed by employees in this age bracket.

The survey found that sustainment work was responsible for almost 60 per cent of production and engaged the most number of workers accounting for over half of FTE employment allocated to DMO work. Acquisition followed with 41 per cent of FTE workers. The largest Defence production sector was found to be the maritime sector, reflecting the size and prominence of the Australian naval shipbuilding industry.

The majority of work undertaken by the prime contractors was completed in-house. It is likely that prime contractors can access the technical and specialised expertise required to undertake this work, including expertise in systems integration, project management, and research and development.

Defence prime contractors surveyed engaged 80 per cent of their workforces in Defence-related work. However, it is also possible that the 20 per cent of staff engaged in non-Defence work could be deployed to Defence work during peak periods.

Workforce Composition

For professional occupations, engineers were the most employed professionals by surveyed major contractors on Defence related production projects. These companies engaged 3 444 out of their total engineering workforce of 3 881 in Defence work. Other professionals, Accountants, Auditors and Company secretaries followed. Fabrication engineering trades workers were the most employed in the trade and technicians category, comprising 632 workers for prime contractors and 1 155 across the survey.

Recruitment

Engineering professionals was the most commonly advertised skill across the companies surveyed as well as the most advertised within each of companies. It follows that the survey found engineering professionals to be the most common occupation respondents had difficulty filling, while mechanical engineering trades workers was found to be the most difficult position to fill.

The main reason for companies being unable to fill vacancies was technical skill and requirements of the job, suggesting a recruitment difficulty for suitably skilled or experienced workers. Tight labour markets and not enough applicants were other key reasons respondents felt attributed to their recruitment difficulties.

Average employee turnover has remained relatively stable over the three years to 2011, with respondents reporting an average of 12.9 per cent in 2010-11 for turnover in Defence industry, lower than the suggested average staff turnover across all Australian companies of 18.5 per cent (AHRI, 2008).

The *DMO/Skills Australia Major Contractors Survey* suggested that Defence industry has relatively low industry turnover and a degree of employee circulation within the industry. 38 per cent of employee turnover was attributed to employees 'moving to a competing company in the same industry'.

Training

The surveys suggest that DMO-funded skilling programs are highly successful in upskilling employees and that the acquired skills are put to good use within the industry. There is also strong evidence that the upskilling and reskilling of employees is good for staff retention.

Survey Methodology

DMO/Skills Australia Major Contractors Survey

The *DMO/Skills Australia Major Contractors Survey* was conducted in conjunction with DMO and emailed to the top 49 Defence industry companies, determined by the average number of full time equivalent staff working on DMO projects. These companies were identified by DMO using administrative records that included year-on-year sales levels and the strategic positioning of each of the firms within the sector. The survey was divided into two sections. The first section requested information on firm characteristics and sales figures and was designed by DMO, and the second section was designed by Skills Australia and focused on labour force profiles, recruitment experiences and skills and workforce development.

The response rate for this survey was 67 per cent, with 75 per cent of firms completing the entire survey. It should be noted that the respondents included each of eight largest Defence contractors.

The DMO section of the survey asked for both quantitative and qualitative information. Respondents were asked to give an indication of total corporate sales, sales broken down into sales to DMO and Defence and all other sales, sales by sector and sales by location.

The second section was designed by Skills Australia and asked respondents to provide details of workforce composition, recruitment experiences, and training characteristics.

Skills Australia SME survey

The *Skills Australia SME survey* was targeted toward small and medium sized companies that produce about a quarter of Australian Defence materiel. This survey was delivered to a sample of companies taken from the Defence Industry *ePortal* database that deliver priority or strategic industry capabilities. This frame was then stratified to reflect state distributions, and each strata was randomly sampled to produce the sample group of companies that Skills Australia approached to participate in the SME survey exercise.

The *Skills Australia SME Survey* was conducted using both an internet tool and phone interviews. The response rate for this survey was 33 per cent and 90 per cent of these respondents completed the survey. The information derived from the survey was matched to Defence *ePortal* data, including workforce size, annual turnover and percentage of work attributable to Defence production.

Survey Findings

The *DMO/Skills Australia Major Contractors Survey* sought to determine the amount of Defence materiel produced in Australia using local labour as an input. The purpose of this section of the survey was to distinguish between goods and services produced primarily within Australia, and goods and services imported and then on-sold to DMO with minimal transformation or local input. For example, a company may import a product from an overseas parent or another overseas company and then modify the product locally to comply with Defence requirements. In this situation, respondents were asked to record the value of the overseas component as 'Overseas Content', and the value of the local modification as 'Australian content'.

Similarly, where local labour is used to produce exported Defence materiel, respondents were asked to record the value of Australian labour content. **Table 3** provides the breakdown of total production for the surveyed major contractors for the financial year 2010-2011.

Table 3: DMO and non-DMO sales content

Sales Sector Categories	Percentage (%)
Non-Defence (including non-Defence exports)	27.90
DMO - Australian content	47.32
DMO - Overseas content	13.54
Non-DMO Department of Defence Work	7.55
Defence exports for overseas Defence customers	3.69
Total	100.00

Source: DMO/Skills Australia Major Contractors Survey 2012

Table 3 shows that the majority of sales are DMO domestic content related, although a substantial proportion of sales by Defence major contractors are non-Defence sales. The results also suggest that there is a small export market for Australian firms, with less than four per cent of respondents indicating that they exported to overseas Defence customers.

Break-down of Australian content for DMO projects by sector

DMO allocates DCP expenditure to five derived Industry sectors: Aerospace, Electronics, Maritime, Land, and Weapons.

Survey respondents were asked to indicate their production percentages for each industry sector. Many projects include activity in multiple sectors. In such circumstances, the survey tool advised companies to split project activity between sectors.

Table 4: Defence supply category production percentage

Sales Category	Percentage (%)
Aerospace	20.37
Electronics	12.38
Maritime	42.66
Land	22.48
Weapons	2.12
Total	100.00

Source: DMO/Skills Australia Major Contractors Survey 2012

Table 4 shows that the maritime sector is the largest Defence production sector, reflecting the size and prominence of the Australian naval shipbuilding industry.

Break-down of Australian content for DMO projects by project category

The DMO divides procurement activity into discrete categories of acquisition, sustainment and other services. Acquisition contracts include all activity supporting equipment and systems entering service, including design, manufacture or importation of materiel. Sustainment contracts include all activity supporting equipment and systems already in service, usually repair, maintenance, overhaul or resupply of materiel. Other services is an additional category that sits outside the DCP and includes consultancy work, IT support, legal service and other services.

Respondents were asked to attribute the percentage of total DMO Defence materiel related sales to each category. The results are aggregated in the table below.

Table 5: Defence production by acquisition, sustainment and other services

Expenditure type	Percentage (%)
Acquisition	38.7
Sustainment	58.6
Other services	2.7
Total	100.00

Source: DMO/Skills Australia Major Contractors Survey 2012

Table 5 shows that sustainment is responsible for almost 60 per cent of Defence production undertaken by the surveyed companies, with acquisition responsible for some 39 per cent. This is consistent with current estimations for the breakdown of Defence materiel spending.

Break-down of Australian content by prime and sub-contracting arrangements

Survey respondents were asked to indicate the percentage of sales between prime contractor and sub-contractor activity during the latest full financial year for which data is available.

Prime contractors refer to one of the largest eight Defence contracting firms. For the purpose of this survey response, a prime contractor is the corporate group that signs the contract with DMO. Sub-contractors are firms engaged by prime contractors to deliver elements of the prime contract.

Table 6: Defence production by work type

Activity Category	Percentage (%)
Work performed in-house as prime contractor	64
Work sub-contracted	22
Work performed in-house as sub-contracted	14
Total	100.00

Source: DMO/Skills Australia Major Contractors Survey 2012

Table 6 shows that the majority of work undertaken by the surveyed prime contractors is completed in-house. It is likely that prime contractors can access the technical and specialised expertise required to undertake this work, including expertise in systems integration, project management, and research and development. The more capital-intensive inputs to Defence projects may be sub-contracted from other suppliers. However, more information is required to assess patterns in the nature of the work subcontracted out to supply chains by the prime contractors.

Labour Force Profile

Workforce Size

The *DMO/Skills Australia Major Contractors Survey* sought to quantify the size of the potential Defence industry workforce by asking companies to report their total corporate employment. This relates to the size of the entire labour force of companies that contract with DMO, not just that part that works on Defence related activities. Therefore, the employment figure includes staff involved in DMO, Defence and non-Defence work, as well as part-time and full-time staff. Respondents were instructed to exclude staff employed as sub-contractors and the survey found that total employment within surveyed companies was 17 353 people.

The survey also sought to distinguish between staff levels working on DMO related contracts and other staff during the 12 months to 30 June 2011. Respondents were instructed to equate one full-time equivalent staff member to a standard 38 hour working week, e.g. a person working 19 hours per week throughout the year should be treated as 0.5 FTE.

This information was further broken down into the expenditure categories of acquisition, sustainment and other services. **Table 7** below provides detail of both nominal and FTE aggregates. The results are in line with the production breakdown listed in **Table 5**.

Table 7: Defence production by acquisition, sustainment and other services

FTE employment on work for DMO	Percentage (%)
Acquisition	41
Sustainment	52
Other services	7
Total	100.00

Source: DMO/Skills Australia Major Contractors Survey 2012

Workforce by State

The defence industry workforce reported by survey respondents is distributed across the country with the largest percentage of workers employed in South Australia and the least in the Tasmania.

Table 8: Percentage of national Defence related FTE workforce by state

State	Number	Percentage (%)
NSW	2 127	18
VIC	2 870	24
QLD	1 647	14
SA	3 906	32
WA	867	7
TAS	8	0
NT	345	3
ACT	366	3
Total	12 136	100.00

Source: DMO/Skills Australia Major Contractors Survey 2012

Respondents also classified their workforce by age, shown in **Table 9**. While the survey does not disaggregate the ages of workers across different occupations, the relatively high proportion of workers in the 45-60 age group (45 per cent) is an issue of concern for the sector. These workers are likely to carry significant corporate knowledge and technical expertise, capabilities which may be difficult to replace in these organisations.

Table 9: Total employment by age group

Age Cohort	Number	Percentage (%)
15-24	955	5
25-34	3 937	21
35-44	5 361	29
45-54	5 222	28
54-60	3 142	17
Total	18 617	100.00

Source: DMO/Skills Australia Major Contractors Survey 2012

Workforce Composition - Current employment by broad occupational group

The *DMO/Skills Australia Major Contractors Survey* asked respondents to indicate average full-time equivalent (FTE) staff levels working on DMO contracts. Respondents were asked to allocate staff levels to ANZSCO (1220.0 ANZSCO) Minor Group 3 digit level. **Tables 10** and **11** list the top occupations and distinguish between prime contractor employment and total employment. Engineers accounted for 34 per cent of all FTE staff identified.

Table 10: Employment on Defence related production – professional occupations

Occupation	Prime Contractors	Survey Total
Engineering Professionals	3 554	3 881
Other - Professionals	1 025	1 116
Accountants, Auditors and Company Secretaries	439	491
Business and Systems Analysts, and Programmers	392	454
Business Administration Managers	312	423
Sales, Marketing and Public Relations Professionals	357	400
Database and Systems Administrators, and ICT Security Specialists	266	310
Construction, Distribution and Production Managers	233	275
Air and Marine Transport professionals	168	189
Chief Executives, General Managers	119	167
ICT Managers	68	75
ICT Network and Support Professionals	39	46
Total	6 972	7 827

Source: DMO/Skills Australia Major Contractors Survey 2012

Table 11: Employment on Defence related production – trade and technician occupations

Occupation	Prime Contractors	Survey Total
Fabrication Engineering Trades Workers	632	1 155
Other -Technicians and Trades	516	810
Mechanical Engineering Trades Workers	235	512
Miscellaneous Technicians and Trades Workers	151	445
Electronics and Telecommunications Trades Workers	144	160
Electricians	112	120
Panelbeaters, and Vehicle Body Builders, Trimmers and Painters	31	39
Building and Engineering Technicians	12	33
Automotive Electricians and Mechanics	4	10
Carpenters and Joiners	3	3
Total	1 840	3 287

Source: DMO/Skills Australia Major Contractors Survey 2012

The Defence prime contractors that responded to the survey engage 80 per cent of their workforces in Defence-related work. It is also possible that the 20 per cent of staff engaged in non-Defence work could deploy workers to Defence work during peak periods for Defence sales.

Recruitment

The *DMO/Skills Australia Major Contractors Survey* asked respondents about their recruitment experiences. In a strong indication of the state of the labour market in Defence industry, 22 per cent of respondents indicated a 'tight labour market or not enough applicants' as the reason they were unable to fill vacancies. Conversely, 56 per cent of respondents indicated 'technical skill, requirements of the job' as the reason they were unable to fill vacancies, suggesting a recruitment difficulty for suitably skilled or experienced workers.

Respondents reported greatest difficulty filling vacancies in WA, with 32 per cent ranking it as the most difficult labour market.

Table 12 provides detail of the top five occupations where surveyed companies experienced difficulty filling vacancies in the previous 18 months. Of the 42 per cent that reported experiencing recruitment difficulty, 31 per cent reported difficulty filling vacancies for engineering professionals, while 24 per cent indicated engineering professionals as the most difficulty vacancy to fill.

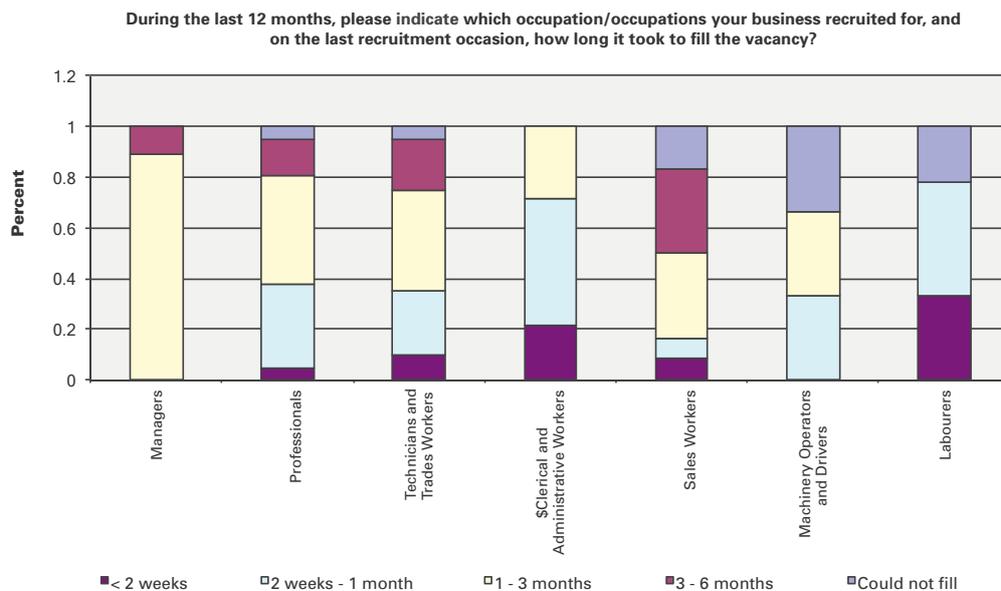
Table 12: Occupations experiencing recruitment difficulty

Occupation	Difficulty (%)	Most difficulty (%)
Engineering Professionals	31	24
Mechanical Engineering Trades Workers	22	29
Miscellaneous Technicians and Trades Workers	11	10
Other	11	5
Fabrication Engineering Trades Workers	8	10

Source: DMO/Skills Australia Major Contractors Survey 2012

The *Skills Australia SME Survey* supports these findings. **Figure 2** shows recruitment by broad ANZSIC occupational group and time taken to fill vacancies as a proportion of total respondents. For example, 85 per cent of respondents filled vacancies for managers within 1 – 3 months, while 15 per cent took 3 – 6 months.

Figure 2: Recruitment by major occupational group and time taken to fill vacancies



Source: Skills Australia SME Survey 2012

Recruitment Characteristics

The *DMO/Skills Australia Major Contractors Survey* sought to quantify the occupations that had been most advertised by the Defence Major Contractors surveyed over the previous 18 months, whether or not these occupations were in shortage and reasons why respondents could not fill vacancies.

Table 13 provides detail of advertised occupations. Respondents were asked to rank the 4 most advertised occupations throughout the last 18 months. This data has been organised to reflect those occupations all respondents indicated as having advertised for and those occupations respondents indicated as having most advertised for.

Of all respondents, 61 per cent indicated as having advertised for engineering professionals in the last 18 months, whereas 43 per cent of respondents ranked engineering professionals as the most advertised for occupation throughout the period. The breakdown of occupations advertised for follows the relative proportion of occupational employment, in that the most advertised for occupations also employ the most people within Defence industry.

Table 13: Advertised occupations

Occupation	Advertised for (%)	Most Advertised for (%)
Engineering Professionals	61	43
Mechanical Engineering Trades Workers	25	20
Miscellaneous Technicians and Trades Workers	19	10
Fabrication Engineering Trades Workers	17	10
Business Administration Managers	11	3
Accountants, Auditors and Company Secretaries	6	0
Business and Systems Analysts, and Programmers	11	7
Electricians	8	0
Electronics and Telecommunications Trades Workers	14	7
ICT Network and Support Professionals	6	0
Sales, Marketing and Public Relations Professionals	6	0
Automotive Electricians and Mechanics	6	0
Construction, Distribution and Production Managers	3	0

Source: DMO/Skills Australia Major Contractors Survey 2012

The *DMO/Skills Australia Major Contractors Survey* asked companies who experienced recruitment difficulty to rank suggested reasons for this difficulty. **Table 14** indicates 56 per cent of all respondents attributed 'Technical skill requirements of the job' as the most common reason for experiencing difficulty filling a vacancy, while 22 per cent of respondents thought this was the most significant reason for experiencing a difficulty filling a vacancy. **Table 15** shows where employers had the most difficulty filling vacancies.

Table 14: Reasons companies cannot fill vacancies

Reason cannot fill vacancies	Respondents (%)
Technical skill requirements of the job	56
Working hours	44
Recruitment process difficult / time consuming	39
Soft skill requirements of the job	36
Location	31
Seasonality	28
Licensing / registration requirements	25
Tight labour market / not enough applicants	22
Nature of the work required	22
Working contract and/or conditions	14

Source: DMO/Skills Australia Major Contractors Survey 2012

Table 15: State where respondents experienced most recruitment difficulty

State	Most (%)
WA	32
NSW	18
QLD	18
VIC	9
SA	9
NT	9
ACT	5

Source: DMO/Skills Australia Major Contractors Survey 2012

The *Skills Australia SME Survey* had different results to the *DMO/Skills Australia Major Contractors Survey* relating to recruitment difficulties, although similar issues were raised. For instance, respondents to both surveys noted the tight labour market as a recruitment impediment, although 42 per cent of respondents in the *Skills Australia SME Survey* noted it as a primary reason compared to 22 per cent in the *DMO/Skills Australia Major Contractors Survey*.

Employee Turnover

Table 16 shows average employee turnover from the *DMO/Skills Australia Major Contractors Survey*. Respondents reported an average of 12.9 per cent in Defence industry workforce turnover for 2010-11. Research from the Australian Human Resources institute suggests that average staff turnover across all Australian companies is 18.5 per cent, and 17.4 per cent for organisations with 1 000 employees or more (AHRI, 2008).

As **Table 17** shows, 38 per cent of employee turnover is attributed to employees 'moving to a competing company in the same industry'. This suggests that the Defence industry has relatively low industry turnover and a degree of employee circulation within the industry. However, the survey suggests that almost two-thirds of employee turnover is attributed to people leaving the industry.

Table 16: Average employee turnover

Year	Percentage (%)
2008-2009	13.5
2009-2010	12.1
2010-2011	12.9

Source: DMO/Skills Australia Major Contractors Survey 2012

Table 17: Reason for employee turnover

Turnover Reason	Percentage (%)
Moved to a competing company in the same industry	38
Moved to a company in a different industry	26
Retired	9
Short-term contractual arrangements	9
Lifestyle reasons	6
Family reasons	6
Working conditions	3
To pursue a new career	3

Source: DMO/Skills Australia Major Contractors Survey 2012

Skilling and workforce development

The two surveys undertaken suggest that, for surveyed companies, Defence-supported skilling programs are highly successful in upskilling employees and that the acquired skills are put to good use within the industry.

Defence have a number of skilling programs and initiatives that engage with industry and help keep skills current. The *DMO/Skills Australia Major Contractors Survey* found that 68 per cent of surveyed companies accessed publicly funded training programs. This compares with the Skills Australia SME survey which found that 34 per cent of respondents had accessed Defence-sponsored skilling programs in the last two years. **Table 18** shows the results and uses of Defence skilling programs.

Table 18: Defence skilling programs

Category	Percentage (%)
Focussed on areas where skilling needs are most acute	61
Focussed on Defence projects relevant to Priority Industry Capabilities (PICs)	36
Focussed on developmental aspects of new military capabilities rather than more routine forms of project maintenance or sustainment	31
Subsequently been supported by defence project expenditure	28

Source: DMO/Skills Australia Major Contractors Survey 2012

These results are similar to the Skills Australia SME survey which found 64 per cent of respondents 'focused on areas where skilling needs are most acute'. Forty-five per cent of respondents also noted that the skilling programs enabled successful bids on Defence projects. **Table 19** shows what happens to the staff who undertake the skilling programs (including programs for formal training, innovation and business/market development) following their participation.

Table 19: Defence training programs

Category	Percentage (%)
Remained with your company, to work on Defence projects connected with the expertise they have gained	64
Remained with your company, to work on commercial projects connected with the expertise they have gained	39
Moved to a different job or geographic location within the company as a result of increased expertise	28
Left your company but remained in Australian Defence industry	33
Moved outside the industry	25

Source: DMO/Skills Australia Major Contractors Survey 2012

These results are supported by the *Skills Australia SME Survey* which found that 92 per cent of employees who accessed Defence training programs remained with their company to work on Defence projects, while only eight per cent moved outside the industry.

Appendix E – Public Consultations

Attendees to public consultations

Government Organisations

Department of Defence
Defence Materiel Organisation
Department of Employment, Education and Workplace Relations
Department of Innovation, Industry, Science, Resources, and Tertiary Education
Enterprise Connect
NSW Department Trade and Investment
VIC Department of Business and Innovation
Skills Victoria
QLD Department of Employment, Economic Development and Innovation
Skills Queensland
SA Department of Further Education, Employment, Science and Technology
SA Training and Skills Commission
Business SA
Defence SA
Defence Reserve Support Council
WA Department of Education
WA Department of Training and Workforce Development
TAS Department of Economic Development, Tourism and the Arts
NT Department of Business and Employment

Industry Associations

Australian Business Defence Industry Unit
Australian Industry and Defence Network
Australian Industry Group
Defence Industry Innovation Council
Defence Teaming Centre Inc
Hunternet
Regional Development Australia - Hunter
Royal United Services Institute
Spatial Industry Business Association (Australia)
Submarine Institute of Australia
Textile and Fashion Institute of Australia

Unions

Australian Manufacturing Workers' Union
Association of Professional Engineers, Scientists and Managers Australia

Education and Training Sector

Australian Maritime College
Canberra Institute of Technology
Creative Industries Skills Council
East Coast Apprenticeships
Engineering and Automotive Training Council Inc
Hunter Institute, NSW TAFE
Manufacturing Skills Australia
Maritime Skills Centre
MEGT Australia Ltd

Education and Training Sector cont...

Re-engineering Australia Foundation
Universities Australia
University of Melbourne (Defence Science Institute)
University of Newcastle
University of New England Partnerships
WA Polytechnic

Private Sector

Adcorp Australia
Artis Group
Austal
Australian Aerospace Ltd
Australian Defence Apparel Pty Ltd
Australian Leadership Academy
Australian Submarine Corporation Pty Ltd
Aviation Australia
BAE Systems Australia
Baron Rubber Pty Ltd
Boeing Australia and South Pacific
CAE Australia Pty Ltd
CBG Systems Pty Ltd
CEA Technologies Pty Ltd
Cirrus Real Time Processing Systems Pty Ltd
Cognesis Aerospace Engineering
Defence Systems Innovation Centre
DMS Maritime Pty Ltd
Elbowroom (Aust) Pty Ltd
Eventra Technology
Forgacs Group
Fortis Consulting
Georgiou Group
Hawker Pacific Pty Ltd
HI Fraser Pty Ltd
Integrated Design and Engineering Solutions (IDES) Pty Ltd
Inventra Recruitment
ITE
JL Production
KPMG
Knee Deep
Lockheed Martin Australia
Northrop Grumman
NT Fasteners and Darwin Accident Repair Centre
Parsons Logistik
Priority Management
Qantas Defence Services
Raytheon Australia
Saab Technologies Australia
Technical Fabric Services Australia Pty Ltd
Thales Group
Universal Technical Training Services Pty Ltd
VEEM Ltd
Transfield Services (Australia) Pty Ltd

Summary of Public Consultations

Introduction

In February and March 2012, Skills Australia conducted consultation sessions in all capital cities and in Newcastle to discuss priority skills issues with attendees and inform Skills Australia for the Strategy.

The consultation sessions were based on a set of questions contained within the Discussion Paper. Attendees included representatives from industry, industry associations, unions and education/training providers. 150 people attended the public consultations and 27 private meetings were held.

This summary is not intended to be exhaustive, but is intended to identify some recurrent themes related to workforce skilling which emerged throughout the consultation process.

Key skills demand issues

Ongoing competition from the resources sector for specialist skills

A majority of attendees highlighted that competition from the resources sector is making it difficult for Defence industry to find and attract qualified and experienced personnel. The poaching of specialist staff is having a significant effect, as the issue is not just about replacing individuals, but rather replacing discrete capabilities that comprise a degree of corporate and professional knowledge. For example, anecdotal evidence from attendees indicated that leading hand welders can nearly double their wages by working in the resources sector of WA.

However, several attendees also remarked that the loss of specialist skills from Defence industry to the resources sector is overstated. While there are some specialist skills that can move to the resources sector, the transfer of skills is low and many critical skills in Defence industry are specific to the sector, e.g. naval warfare system engineers.

Some firms are developing innovative HR strategies to mitigate the loss of specialist skills to the resources sector. For example, one SME is offering unlimited paid overtime in an effort to boost remuneration. This strategy has assisted in retaining their staff.

Defence industry needs to better market the advantages of working in the industry including geographical stability of work location, career development and recognised qualifications.

Many skills demanded by Defence industry are not transferable from other sectors

Much of Defence acquisition and sustainment work is highly technical and requires skill sets that are not always transferable from other industries. Moreover, Defence industry firms want people who have qualifications and substantial experience in their specialised fields and are not always willing to consider transferability of skills from other industry sectors.

Electrical and electronics engineers reported as key professional skills imbalances

Industry reported that their biggest hurdle is finding suitable candidates, with advertised positions often attracting large numbers of applicants with the majority not possessing the required experience and/or specialist skills. Additionally, many Defence prime contractors aim to attract the "best and brightest" graduates to their firms, which considerably narrows the talent pool.

Electrical and electronics engineering were identified as having the most skills imbalances during the consultations. The identification of thin markets included plant engineers (only 100 people in Australia) and geospatial skills sets (all aspects of Defence and ADF activity require geospatial information).

Electricians reported as key trade and technician skills imbalance

Electricians emerged as a key skill shortage during consultations, particularly in SA where some companies have been conducting both traditional advertising and using social media. Firms also reported difficulty in attracting qualified and experienced welders. One company identified that, at the time of the consultations, they had only about 60 per cent of their needed workforce. Other trade and technician skills imbalances varied across locations. For example, imbalances were reported in NT against a range of occupations including, mechanical engineers, vehicle mechanics and electricians.

Thin markets are also a key issue, with one manufacturing firm citing difficulties hiring manual machinists and moulding tradespersons (discrete occupations with little external vocational training available).

Project management and leadership skills are key gaps, particularly within SMEs

A recurring issue was the importance of staff with skills and experience in leadership and complex project management, with many prime contractors paying for staff to complete project management courses.

Attendees identified that the Executive Masters in Complex Project Management Masters offered by QUT as one of the best regarded project management course in Australia. While industry response is positive for this course, drawbacks include three months intensive coursework and travel to Queensland.

A key role for government is to provide assistance for SMEs to build organisational capability, especially in management skills for the complex Defence procurement environment. Some attendees commented that while Enterprise Connect provides a valuable “one touch” approach to business capability building, a longer-term mentoring approach were suggested to assist businesses in planning for Defence procurement opportunities. To deliver this service, a panel or pool of experts could be established to support SMEs at crucial points.

Some education institutions are considering the development of contextualised project management courses suited to Defence contractor needs. Modules would be designed for SMEs and would utilise eLearning delivery and be linked to skill set development.

Key skills supply issues

Views from Defence industry on the quality of VET provision

A number of attendees expressed concerns with the quality of VET teaching and levels of industry engagement for Defence-related trades, referring to the uncertainty of courses with low enrolments. In response to this uncertainty, some larger organisations reported engaging RTOs to assist with in-house training, instead of hiring an RTO to conduct the entire training program.

Given the specific needs of Defence industry, it was suggested that a rating program similar to the ‘heart smart tick’ program be implemented to identify the quality of training provided by RTOs. This is seen as particularly important for post-trade training. Some RTOs were also commended for providing innovative and responsive training solutions to industry. For example, one RTO is working with organisations in the aerospace sector to improve the relevance of the Manufacturing Certificate III to workers in that section of Defence industry.

Stakeholders supported the provision of post-trade training within specific skills sets for qualified tradespeople and professionals. While nationally accredited skills sets are contentious in some industries, this mode of delivery is thought suitable for specific roles, including specialist welders in naval construction.

Defence-focused training development for specialist trades and technical workers

Given the likely increase in demand for specialised tradespeople over the next decade, several attendees voiced concerns about the scarcity of specialised training programs aimed at tradespeople. One example given was welding techniques required for naval shipbuilding.

Attendees noted that the generalisation of competency based trade training programs has reduced the effectiveness of these programs, with additional training needed to be undertaken in-house in order to ensure that tradespeople have the skills required to do their work.

Some organisations are developing innovative bespoke training programs. For example, one organisation is conducting a program for training people from other trades in specific welding skill sets. They have been able to employ four tradespersons utilising this method, and found they can develop tradespersons in six months to meet their workplace-specific needs.

There is an emerging demand for TAFEs to run bespoke trade training programs. The importance of quality training materials to support training was also highlighted. In particular, e-learning is seen as an important mode of delivery, especially for qualified tradespersons who may not want to return to classroom learning.

The role of apprentices in Defence industry

There is a strong commitment to the apprenticeship system in Defence industry. However, a number of attendees expressed dissatisfaction with the quality of training provided by RTOs, citing current RTO delivery to be poorer than in the past.

The base competency and foundational skills of apprentices was another issue. Attendees felt that schools are not giving students a good grounding in foundational skills. ASC commented that 50 per cent of applications for apprenticeships could be immediately cut due to poor mathematics skills. A significant number of attendees identified that post-trade training is vital to bring apprentices 'up to scratch', but can only be achieved if apprentices possess sufficient literacy and numeracy skills to understand work requirements in Defence upgrades and refits (particularly given the technological changes involved).

However, firms investing in apprentices find the investment worthwhile. For example, one firm endeavours to recruit three Certificate III electronics apprentices each year. At the end of their fourth year, these apprentices can undertake further study (for example, an undergraduate degree, advanced diploma and/or upskilling to engineering) while still working at the firm.

Apprentices are a long-term investment for firms and retention can be difficult. Employers need to advocate the long-term advantages of completing an apprenticeship. It was noted that organisations with strong training cultures are more likely to retain apprentices.

Some suggestions for apprenticeships in Defence industry include the utilisation of the Australian Government funded National Apprentices Program, which employs adults as apprentices. As well, greater use could be made of the Group Training Organisation (GTO) network. It was suggested that firms should receive SADI funding to support apprentices and then use a GTO to manage the process.

Science, technology, engineering and mathematics (STEM) attraction

The importance of STEM in schools was highlighted by all attendees. Of particular concern was the decline of students studying STEM subjects. Many of the in-demand and specialised occupations require students to have taken advanced mathematics and science subjects in secondary school.

A significant number of attendees referred to the central role of industry in demonstrating the value of careers in the industry to schoolchildren and their parents, particularly those students with the capabilities to work in specialist occupations. One example of effective industry/school engagement is in NSW, where in one project mathematics teachers meet with the staff of local company to explore the importance and use of mathematics in the maritime industry. This information (and associated learning material) is then used in classes to demonstrate the relevance of mathematics in everyday life.

Scholarships and cadetships offer excellent pathways into Defence industry

Scholarships and cadetships provide a useful source of skills supply.

Attendees identified the difficulty of the acceptance and widespread adoption of scholarships and cadetships by industry, given the instability of Defence business. An added disincentive for many smaller firms is they may not have the resources or capacity to employ newly graduated people due to the time needed for them to deliver value to business.

One possible remedy could be a shared approach, whereby a number of firms work together to engage recipients. This may be difficult to administer but worth exploring with industry associations. One strategy worth looking into is a form of return of service obligation/cadetship arrangement targeting final year students, particularly those in specialist engineering qualifications. This would require substantial agreement from tertiary education providers and professional associations.

The United States and United Kingdom may provide useful models for scholarships and cadetships.

Under-utilised labour supply

Defence industry could benefit from training programs that source skilled labour from under-utilised sections of the workforce, including women and Indigenous Australians. In WA, Defence industry could take advantage of workers who do not want to do FIFO work.

Many women are not attracted to work in remote locations e.g. mining sites, but could provide a stream of labour for Defence industry. Some attendees thought that the under representation of women in the sector may discourage female engineers, particularly female engineering graduates from entering the industry. In recent years, prime contractor Thales WA has targeted female VET and university graduates, having recently hired their first female electronics technician.

Older workers are another potential source of workers. One disadvantage is that mature age apprentices face a higher pay scale due to their age when compared to their younger counterparts.

Other sectors with transferable skills are the automotive sector, with highly skilled process engineers, logistics specialists and project managers while the banking sector offers skill sets related to the development and management of complex IT systems.

Skills transfer from the resources sector in coming years

Anecdotal evidence suggests that the average working age in the mining industry is 25-35 years and workers spend 2-3 years in the industry. Anecdotally, there are indicators that there are increasing numbers of workers who are staying in the resources sector for less than 12 months. Both of these issues provide the potential for ongoing skills supply for Defence industry.

In oil and gas projects, the cost of construction and infrastructure is considered immaterial to the overall cost of the project due to anticipated long term profits, meaning low cost producers of plant equipment (with components manufactured in SE Asia) monopolise the market. This may lead to a surplus of skills in the local market. A systemic approach to skills matching is needed across the resource and Defence industries so crossover skill sets can be identified, mapped and potentially transferred between the sectors.

DMO skilling programs

The consultation sessions and private meetings identified that the DMO skilling programs (particularly SADI) deliver effective outcomes across Defence industry, including through the funding of organisations to support staff undertaking costly postgraduate courses in specific engineering specialisations. The School Pathways Programs funded by DMO are seen to be generating many positive outcomes, although they currently only operate in three locations.

Attendees suggested the following potential improvements to the DMO programs:

- Funding reforms to the SADI program to assist SMEs who have to pay a portion of the training funding in advance, and then submit to the application process, including:
 - multiple funding rounds each financial year,
 - funding for a calendar year instead of a financial year, and
 - milestones for claiming expenditure rather than at the end of the financial year.
- SADI needs to be linked to Defence acquisition/sustainment workflow;
- A broadening of programs to include a range of factors and longer term incentives, including work placements, retention bonuses and non-traditional incentives e.g. housing subsidies; and
- Better evaluation of the skilling programs with clearer links to the PICs and SICs.

Appendix F – Summary of Submissions Received

Organisations which made submissions to the Defence Industry Workforce Strategy

Australian Industry Defence Network – Northern Territory
Australian Manufacturing Workers Union
Australian Submarine Corporation
Australian Industry Group
Australian Aerospace
Australian Maritime College
BAE Systems
Boeing Australia and South Pacific
Mr Brian Hague (private citizen)
Business South Australia
Challenger Institute of Technology
Cirrus Real Time Processing Systems
Creative Industries Skills Council
Defence Teaming Centre
Engineers Australia
Hunter Regional Development
Manpower Group
Mr Chris Hamill (private citizen)
Manufacturing Skills Australia
Northrop Grumman
Northern Territory Government
Performance Engineering Group
South Australian Government
SAAB
Spatial Industry Business Association
Submarine Institute of Australia
TAFE Directors
Textile and Fashion Institute of Australia
Training and Skills Commission

Introduction

This is a summary of the 29 formal submissions received by Skills Australia. This summary is not intended to be exhaustive but instead highlights a number of recurrent themes related to workforce skilling from the submissions.

Skills Demand

Critical specialist occupations and how government and industry can work together to maximise the availability of the skills.

The majority of submitters have highlighted skills shortages in a number of fields to varying degrees with engineering amongst the most critical (aeronautical, chemical, civil, electrical, electro-optics, electronics, electronic warfare, combat systems, materials, marine construction, mechanical, radar, software and structural).

Growth in the resources sector, along with the attractive salaries being offered by resource companies, further limits the pool of experienced specialist personnel for Defence industry.

Other occupations highlighted included:

Professionals

- ITC specialists
- Naval architects
- Mathematicians and Statisticians
- Managers (project and contract)
- Logisticians and Researchers
- Principal Electrical Designer
- Scientists (especially physicists)
- Computer scientists

Technicians

- Technicians (including avionics)
- Planning and Scheduling skills
- Estimators
- Computer aided design (CAD) draftspersons
- Logisticians
- Training Coordinators
- Naval Vessel Construction skills
- Superintendent Accuracy Control

Tradesworkers

- Sheet metal workers
- Fitters and machinists
- Diesel and motor mechanics
- Boat builders and shipwrights
- Textile and clothing workers
- Structural steel workers and welders
- Electricians
- Plumbers
- Carpenters and joiners
- Boilermakers

Contributors advocated that by working together, government and industry can strategically target workforce capability gaps. By providing standardised training in critical areas, the availability of skill-sets and ability to transition may be increased. An industry-wide approach needs to be taken with a focus on career paths with complementary training regimes. The synchronisation of key procurements could be used to maximise the availability and retention of skilled workers.

A number of submissions supported a review of the ANZSCO system, commenting on the current difficulties in obtaining a clear definition of specialist roles. By providing this definition, Defence industry would be able to utilise a common set of skill codes and terminology, allowing for more discrete identification of Defence industry, as well as those organisations and occupations which support Defence industry.

Current options to address identified skills gaps

Over half of the submissions noted that while traditional approaches to training and development such as apprenticeships and graduate programs are important, they are in themselves insufficient. The challenge for the sector is to convert formal training into experience and then retain that experience.

The current contracting methodology towards rolling wave contracts provides an opportunity for industry to focus on longer term workforce development, enabling industry time to identify and address internal capability gaps by internal professional development.

There are several areas where Defence and industry are addressing the current skills gaps, including the:

- National Workforce Development Fund;
- SADI Funded Programs;
- School based programs to improve the study of STEM subjects, including: the DMO School Pathways Programs; the DMO sponsored F1 in Schools initiative; FIRST Robotics; and Lego League programs;
- Rapid Prototyping, Development and Evaluation (RPDE); and
- 'Try a Trade' and 'Try a Technology' programs; and
- various State and Territory government initiatives.

Informed planning and commitment to Defence project timelines was cited by many submissions as essential in order to manage the shortage of critical occupations. Delaying a project may seem an easy economic solution. However, if implemented without consideration of the time and investment by companies in preparing their skilled workforce or the competition from other industries, it could negatively impact on the demographics of the workforce. It may also have a significant impact on the supply chain capabilities to deliver the project on time, to cost and to specific quality.

How can government, industry and the training sector work together to manage competing demand for skilled labour over the next decade?

The submissions identified that consultation between Defence, industry and the training sector is critical in order to identify demand requirements over the next decade and acknowledged the need for meaningful strategies and programs. Training should address both current needs and seek to anticipate future needs and should be complemented by workforce and skill profiling.

A majority of submissions identified that a critical factor in developing and maintaining a skilled workforce is a continuous flow of project work. This was seen as critical to both the retention of sufficient experienced skills for current industry needs and the growth required for future programs. In addition, stakeholders supported the creation of industry 'centres of excellence' which would be developed in partnership with industry, relevant associations and training providers.

This suggests a need for Defence industry to work closely with higher education institutions and Registered Training Organisations to encourage increased participation in training for the necessary specialist occupations.

Skills supply

STEM in schools

The importance of STEM in schools was highlighted by the majority of submissions. They identified the need for industry, Government and the education sector to work together to actively encourage and support young people in the study of STEM subjects.

Suggestions for strategies to do this included the development and implementation of a national program which could provide school students with 'tasters' relevant to careers in Defence industry. Another was the development of a program to actively encourage females to undertake study in STEM subjects, including existing programs offered by organisations such as Robogals International.

Current programs such as the DMO School Pathways programs, FIRST Robotics and Lego League provide some opportunities for involvement. Expansion of these programs would be a positive step.

However, the development of STEM skills should be seen as part of the students' mainstream skills development, rather than in isolation through the implementation of special programs.

In addition, Defence industry needs to work with education providers, particularly schools, to ensure career advisors at the secondary and post-secondary levels encourage students to participate in STEM subjects.

Skilling the workforce

Suggested improvements to skilling programs for Defence industry

Over half of the submissions received recommended the need for a clearly articulated plan demonstrating the relationships and pathways from lower level to higher level qualifications and potential jobs across Defence industry. This plan should include career paths that are designed to allow entry at multiple points (e.g. production, trade, technician and professional levels) and the training regime designed to genuinely facilitate movement to higher levels (e.g. from production to trade and trade to technical levels).

Key strategies which were suggested to achieve this include:

- DMO to commission short-term projects, including research and development projects, to address the need for skills development and maintenance in those areas where there is likely to be significant future need, such as the need to support likely future procurement of submarines.
- The development of a communication and marketing campaign between the Defence Industry Innovation Centres and state Defence industry associations to increase awareness of the industry and skilling assistance programs available to Defence industry from Government.
- The SADI funding approval process should be extended to longer than a financial/calendar year to better support longer term training (such as full qualifications).
- Re-designing jobs to ensure that specialised employees are fully utilised and developing multi-skilling through training existing workers.
- The development of more generic programs targeted to areas of critical skills gaps to allow skills transfer across Defence industry and more broadly between industry sectors.

Many submissions noted that providing organisations with a continuity and sense of certainty about their future work could act as an incentive to retain skilled staff and engage in skills development programs.

The role of scholarship and cadetship programs

The submissions acknowledged the need for meaningful strategies and programs to address the skilling of the Defence industry workforce. This training should address both current needs and seek to anticipate future needs, and should be complemented by workforce and skill profiling.

Submissions identified that major Defence organisations are actively engaged in supporting cadetships, apprenticeships and traineeships and commented that industry must continue to maintain, if not grow, its intake of cadets, graduates, trainees and apprentices.

A number of submissions suggested that organisations need to tackle foundation skills possessed by their staff to ensure their ongoing employability. These skills incorporate language, literacy, numeracy, learning and employability skills. This is a major issue, given the potential implications for staff retention and attraction if an individual's skill set has weaknesses in this area.

An active campaign to recruit apprentices, trainees and cadets in key areas should connect to existing school/university STEM initiatives, such as the School Pathways programs, F1 in Schools, Lego League and First Robotics. There are three distinct phases that contribute to skill formation through any scholarship or apprenticeship systems. These are:

- effective pathways for entry into the system,
- high quality employment relationships, including both on-the-job and off-the-job training, strong induction processes and effective support such as mentoring and pastoral care, and
- opportunities for career development.

Traditional approaches to training and development such as apprenticeships, cadetships, post graduate and transition programs are important mechanisms to prepare people for work. However, it was noted that even though skilling programs are a means by which people can be attracted into Defence industry, they are insufficient by themselves. The challenge for the industry is to convert formal training into experience and then being able to retain that experience within both the organisation and the broader Defence industry.

A number of submissions emphasised the need to tackle foundation skills as a priority. These skills incorporate language, literacy, numeracy, learning and employability skills. This has the potential to become a major issue for organisations, given the potential implications for staff retention and attraction if an individual's skill set has weaknesses in this area.

Industry workforce planning

Improving Defence industry attraction and retention of staff

A majority of submissions stated that surges in Defence work demand should be avoided, including the irregular phasing and programming of work. Longer-term assurance of Defence projects would also see industry invest in skills development and industrial infrastructure. A recommendation from a number of submissions was that a comprehensive Industry Development Plan be developed in concert with the DCP. This Industry Development Plan needs to be innovative, resourceful, flexible and adaptable in order to effectively respond to emerging and changing skill requirements, so that skills shortages are minimised.

Submissions commented on the difficulty in organisations undertaking long term workforce planning, particularly for some critical capabilities, as this is generally limited to the life of current contracts. This limits industry to planning for the life of current contracts and a likely probability for future contracts. The introduction of rolling wave contracts, where a specified number of contract years can be continually extended based on contract performance, is beneficial to workforce planning.

Other suggested strategies included:

- Organisations undertaking Defence minor capital equipment projects (under \$20m in value) involving developmental activities which foster skills development. These minor projects will contribute to the technical de-risking of subsequent major projects. It will also provide substantial benefits, including the early delivery of capability to the ADF, development of industrial skills.
- Mandating the sustainment of equipment close to where it is based, thereby improving regional skills and workforce growth,
- The alignment of sustainment and maintenance contracts to acquisition contracts.

Another key to attracting and retaining staff would be to ensure that work being undertaken is interesting and professionally stimulating. Research on retaining and utilising skilled workers shows that pay, working conditions, and a happy workplace are important but need to be combined with opportunities for growth and development. For today's employee, career progression and lifelong learning is as important as conditions of employment.

There is a need to position Defence industry as an employer of choice with a competitive advantage based around the strength of its culture and the strength of its workforce development programs. Several submissions suggested the development of a comprehensive, cross-industry, workforce planning and marketing strategy for use within Australia and overseas which would give the workforce (and potential employees) greater visibility of opportunities and career choices within Defence industry.