Defence Industry Policy
Submission to the Defence White Paper 2015

Executive Summary

This submission addresses each of the questions concerning Defence industry raised in the issues paper for the 2015 Defence White Paper.

The starting point for the question of which industrial capabilities are vital for the ability of the ADF to field forces and must be located in Australia is that the Defence industry sector is a Fundamental Input to Capability (FIC).

There are a set of capabilities that support the Defence industry in its role as a FIC that we have called national industrial capabilities. Chief among these is the capability to perform the function of prime system integrator. They also include the provision of sustainment services; naval ship and submarine building capability; and advanced manufacturing.

In turn, the national industrial capabilities are supported or enabled by a set of specialist or sovereign skills that include some of those that were previously known as strategic or priority industry capabilities.

There are several international trends evident in the defence industrial sector that are driving Australia toward increased acquisition of military-off-the-shelf (MOTS) equipment, participation in multi-national programs and increased competition in the Australian market by overseas’ based companies. A fine balance must be struck between these factors to ensure Australia retains the national industrial capability and specialist skills to provide freedom of action and the degree of sovereignty required by the Government.

A prerequisite to international competitiveness is that the Australian defence industry sector must have a domestic market which offers some level of guarantee of future work (and schedule) that will enable industry to plan its investments. It has shown itself to be internationally competitive given a neutral environment and conditions (i.e. one not biased toward domestic players in foreign markets) and the opportunity to apply economies of scale. The sector is also creative and innovative but Government assistance may be necessary to raise the Technology Readiness Level (TRL) from prototype to production-ready status and allow insertion into global supply chains.

There are some 40 existing industry support programs provided by Government and these should be rationalised and more carefully targeted. The Australian Industry Capability (AIC) and Global Supply Chain programs have proved effective and should be strengthened in this process.
Introduction

1. This submission addresses each of the questions concerning Defence industry raised in the issues paper for the 2015 Defence White Paper. The key issues are:
   a. Which industrial capabilities are vital for the ability of the ADF to field forces and must be located in Australia?
   b. What are the consequences for Australian industry of international trends in the defence industry sector?
   c. How can the Government best encourage the development of an internationally competitive Australian defence industry?
   d. What is the future of existing industry support programs provided by Government?

2. Further detail and elaboration can be provided in testimony or other discussion with the Expert Panel. In addition, we have a number of case studies to illustrate the main points made in this submission.

Which industrial capabilities are vital for the ability of the ADF to field forces and must be located in Australia

3. Industry as a Fundamental Input to Capability (FIC)
   a. After a series of efficiency and productivity reforms in the last two decades, the military Services are no longer able to provide organic deeper maintenance of major platforms and complex weapons systems. Instead, this function is now performed by Australian industry.
   b. Except for arrangements made under Foreign Military Sales (FMS), and sometimes even with these, this also applies for acquisition of capability.
   c. In other words, the Defence industry sector is an integral part of Defence capability – a Fundamental Input to Capability (FIC).
   d. For this to be successful there must be much earlier engagement between Defence and industry; the establishment of a much closer relationship as a trusted partner; a better managed process; and public transparency.

4. National Industrial Capabilities
   a. National industrial capabilities are the set of capabilities that support the Defence industry in its role as a FIC.
   b. The national industrial capabilities are:
      (i) Prime System Integrator (PSI) or Mission Systems Integrator (MSI).
(ii) Sustainment services provision, including maintenance, repair, overhaul and upgrade of platforms and weapons systems.

(iii) Naval ship and submarine building.

(iv) Advanced manufacturing.

c. In turn these national industrial capabilities are supported or enabled by a set of specialist or sovereign skills for example those associated with:

(i) Platform, Combat and Communication System Integration;

(ii) Naval Architecture, Marine Engineering and Shipbuilding Management;

(iii) High Frequency (HF) radar;

(iv) Acoustics;

(v) Electronic Warfare (EW);

(vi) Phased Array Radar (PAR);

(vii) And many others.

d. Government must decide and clearly state:

(i) Whether or not the defence industry sector is a Defence FIC;

(ii) If so what national industrial capabilities are necessary to support the defence industry sector; and,

(iii) What specialist skills are necessary to enable the national industrial capabilities?

5. Sustainment of Platforms and Major Weapons Systems

a. The maintenance, repair, overhaul and upgrade of all platforms and major weapons systems should be carried out in Australia.

b. This requires the transfer of sufficient and appropriate Intellectual Property (IP) and design artefacts as a pre-requisite to acquisition from an overseas OEM.

c. This has not been well-managed in the past (e.g. Collins class submarine).

d. The successful sustainment of a major weapons system requires the appointment of a Prime Systems Integrator (PSI) that plans and manages the whole process including the selection and nurturing of the supply chain. Defence is not capable of fulfilling this role and it should be contracted to the private sector.

e. For this to be commercially viable and to allow industry to invest in people, processes, infrastructure and technology, the PSI should be
selected early and contracted over a reasonable long-term period provide its performance meets pre-determined criteria.

6. Naval Ship and Submarine Building

a. The exception to the present general condition that most advanced complex weapons systems will be procured overseas is warships and submarines.

b. This is because of the relatively small fleet sizes and the changes necessary to meet Australian operational requirements even though the basic design concept is invariably drawn from an overseas’ manufacturer.

c. The requirement for on-shore sustainment of our warships and submarines through life-of-type (LOT) mandates a high level of industrial capability.

d. Naval ships and submarines tend to have a longer LOT than other weapon systems and hence are subject to higher levels of upgrades and refits over their operational lives.

e. These activities are most effectively undertaken in Australia and this requires not only IP but also those skills which can only be acquired and maintained through shipbuilding (e.g. ASMD Upgrade of ANZAC Frigates).

f. The industry suffers from a chronic boom-bust cycle that could be overcome by even demand management and funding by Defence to retain skills and expertise, continuously improve productivity and provide incentive for continued investment by the private sector.

g. For naval warship and submarines, the business model should be:
   (i) Compete and appoint an Australian-based PSI with capability and experience in managing projects for naval ships / submarines;
   (ii) The PSI, working in collaboration with the Government, competes the design from acceptable and available overseas’ ship designers. Major platform and weapons systems to be installed on the vessel can also be competed in a similar manner. This approach will better assure that the RAN operational requirements are met, whilst at the same time, the Government gets a competitive price and a producible and sustainable vessel;
   (iii) Manufacture of blocks and other major assemblies allocated to Australian and overseas’ yards, as well as minor equipment,
materials and supplies, by the PSI through a competitive process.

(iv) Vessel construction (or at least final assembly if the size of the vessel exceeds Australian capacity constraints), fit-out, testing and trials in an Australian yard.

7. Specialist Industrial Skills

a. Specialist industrial skills are those which serve as enablers for National Industrial Capabilities and which are required for sensitive or sovereign reasons.

b. They generally deal with relatively small quantities, tend to involve advanced technology and are normally reserved for exclusive Australian use.

c. These provide an underpinning ability to effectively support in-service systems and equipment and deliver those unique and sovereign Australian operational capabilities required by our environment (e.g. HF and Phased Array Radar (PAR)).

d. These capabilities are also required to allow the ADF to respond to changing operational circumstances and threat environments (e.g. EW, acoustic technology).

e. These specialist industrial skills provide credibility with allies in the domain involved and allow Australia to obtain a ‘seat at the table’.

f. They are also necessary for use as trade goods to gain access to advanced technology and intellectual property from allies (e.g. advanced electronic attack).

g. Insertion of these capabilities into the global supply chains of major weapons systems developed overseas including but not necessarily those in-service with the ADF allows sustainment of high-end skills and provides export income (e.g. Evolved Sea Sparrow Missile (ESSM)).

h. The nature of complex weapons systems means that the Defence industry sector routinely deals with advanced technology and particularly with advanced manufacturing.

i. Advanced manufacturing by the Defence industry sector introduces technology, processes and capability into Australian industry more generally and can act as a seed for innovation.

j. The defence industry sector is very attractive to young scientists and engineers because of the advanced technology inherent in complex weapons systems. The life cycle of associated niche technologies through innovation, development and production serves as a gene pool
for the training and development of high calibre Australian engineers and scientists.

k. The Defence Science and Technology Organisation (DSTO) and the Commonwealth Scientific and Industrial Research Organisation (CSIRO) are important sources of technical innovation for the Defence industry sector together with universities and publicly funded research institutions. Defence industry policy should facilitate the transfer of technology and publicly funded intellectual property to the defence industry sector.

What are the consequences for Australian industry of international trends in the defence industry sector?

8. International trends evident in the defence industrial sector are:
   a. Increasing cost and complexity;
   b. Continuing consolidation and rationalisation;
   c. Reducing defence budgets;
   d. Increases in multi-national programs; and,
   e. Increasing use of MOTS/COTS systems.

9. Increasing cost and complexity
   a. Cost and complexity means that fewer nations are able to afford to develop and field advanced major weapons systems.
   b. Other smaller nations that cannot afford these costs are forced to buy off-shore, in Australia’s case mainly via US Foreign Military Sales (FMS).
   c. Acquisition from a foreign Original Equipment Manufacturer (OEM) means that an appropriate transfer of technology and Intellectual Property (IP) is necessary in order to sustain these weapons systems in service. This transfer should be accomplished as part of the acquisition contract when the Government has most leverage.

10. Continuing consolidation and rationalisation
    a. There has been a marked consolidation and rationalisation of Defence industry globally in recent years as Defence spending declines.
    b. This has resulted in fewer players seeking wider markets and has led to increased presence and competition for Defence contracts in Australia by (often subsidised) foreign prime contractors.
c. These offerings are often dressed up as Military or Commercial Off-the-Shelf (MOTS/COTS) products but almost always require some (often a significant) degree of modification for Australian conditions.

11. Reducing Defence Budgets
   a. Reductions in international defence budgets have seen an increasing focus on Australia by overseas suppliers as their domestic markets contract.
   b. This has had a twofold effect on Australian industry: it has increased the level of competition faced by Australian industry whilst reducing the opportunities for exports by Australian companies.

12. Increases in Multi-National Programs
   a. The combination of increased cost and complexity, consolidation and rationalisation and reduction in defence budgets has led to an increased trend to multi-national programs.
   b. These have the advantage of spreading cost and risk among a number of nations and thereby assuring the longevity of the program.
   c. Participation in multi-national programs has the benefit that there is at least the opportunity to influence the outcome.
   d. There are considerable disadvantages not the least of which is reconciling conflicting operational requirements.
   e. Work share arrangements in a multi-national program can also result in loss of sovereign industry capabilities.
   f. Other participating countries often subsidise their industry through facilities and start-up funding, which disadvantages Australian industry in open competitions.

13. Increasing use of MOTS/COTS
   a. The Kinnaird review of 2003 and the subsequent Mortimer review of 2008 into Defence procurement practices recommended that any new acquisition proposal should include an MOTS/COTS option for Government to consider as a benchmark.
   b. The international trends discussed above together with an increased aversion to risk on the part of the DMO in the face of a declining Defence budget and increased public scrutiny have led to MOTS/COTS becoming the preferred option to the detriment of the Australian defence industry sector.
   c. This is a pernicious factor that will ultimately lead to the demise of indigenous capability unless reversed by a clear policy statement that
an Australian solution should be the preferred option unless there is clear evidence to the contrary.

d. The criteria for selection of an indigenous over a MOTS/COTS option should not be only the premium in acquisition costs but the life-of-type benefit and associated in-country economic activity.

How can the Government best encourage the development of an internationally competitive Australian defence industry?

14. A prerequisite to international competitiveness is that the Australian defence industry sector must have a domestic market which offers some level of guarantee of future work (and schedule) that will enable industry to plan its investments.

15. Competitiveness comes from both innovation and long term business opportunities.

16. The Australian defence industry sector has shown itself to be internationally competitive given a neutral environment and conditions (i.e. one not biased toward domestic players in foreign markets) and the opportunity to apply economies of scale.

17. Importance of Australian Industry Capability (AIC) Plans:

a. Overseas companies bidding into Australia understand the offsets requirements of other countries, AIC as an industry policy is not well understood.

b. If there is no particular demand from Government then overseas primes are not incentivised to vigorously pursue an optimised AIC solution.

c. The ‘premium’ for AIC should be assessed as an investment in capability and in the entirety of a program, for example a higher cost in acquisition could result in reduced costs in sustainment.

18. Economies of Scale are achieved by:

a. Larger quantities of units by insertion into a global supply chain;

b. Modern, automated production facilities and techniques through infrastructure investment;

c. Continuous investment leading to production runs to maintain expertise and skills achieved by demand management on the part of Defence;

d. The ability to apply lessons learned;

e. Continuous improvement in productivity; and

f. Time to establish fruitful relationships through long-term contracting.

g. These same factors also apply to the supply chain.
19. Supporting and Exploiting Innovation

a. Australian industry has demonstrated a high degree of innovation over a long period.

b. The problem has been to turn novel industrial ideas into prototypes, to undertake full scale engineering development and to transition to a product that meets the ADF operational requirement or can be exported.

c. Without a reasonably certain prospect of sales, few Australian companies can commit to this level of investment, including Australian-based subsidiaries of overseas’ prime contractors and certainly most Small and Medium Enterprises (SME).

d. Government financial support to enable companies with innovative concepts to transition to production is warranted when:

(i) The ADF has a requirement for the capability that will be provided by the concept; or,

(ii) A production version of the innovation could be inserted into the global supply chain of a major weapons systems whether or not the ADF is acquiring this system; or,

(iii) The concept involves an industry capability considered vital for sovereignty or other reasons.

e. This financial support should be sufficient to meet the start-up costs of developing, qualifying and certifying a production version.

f. If the product becomes part of the global supply chain of a foreign weapons system or is exported as a stand-alone item, the consequent economic activity in Australia will more than offset the amount of the grant i.e. this is not subsidising an unprofitable project.

20. Defence Diplomacy

a. Access to the global supply chains of advanced weapons systems requires active participation on the part of Government.

b. In addition to financial support for start-up costs, the Government should strike agreements with the Governments of overseas’ providers of major weapons systems (primarily the US) for access to programs where Australian industry can provide cost competitive technical alternatives to domestic suppliers (e.g. many of the niche capabilities detailed above).

c. Defence staff in our overseas’ missions should be tasked with seeking out and identifying opportunities for Australian industry to access global supply chains.
d. Political and official support will be necessary to overcome the reflexive response of overseas’ OEM to favour domestic suppliers.

**What is the future of existing industry support programs provided by Government?**

21. **Present Situation**
   a. There are more than 20 industry support programs administered by the Department of Defence and about the same number sourced from other Commonwealth departments, primarily Industry.
   b. The Global Supply Chain program (GSC), the activities of the Defence Industry and Innovation Centre (DIIC) and its Supplier Continuous Improvement Program (SCIP) has had a positive impact on industry, raising the competitiveness and capability level of SME.
   c. State governments also provide a range of industry support programs associated mainly with infrastructure development aimed at enhancing or preserving jobs.
   d. There is a lack of coherence in the objectives of these somewhat disparate programs. While each may have an admirable and desirable outcome, they do not have the combined effect commensurate with the expenditure.
   e. Furthermore, those associated with boosting innovative ideas and concepts to a higher Technology Readiness Level (TRL), for example the PIC Innovation Fund and the Defence Innovation Realisation Fund, each provide too small an amount to be effective in achieving this aim.

22. The policy objectives of Defence industry support should be:
   a. To ensure Australian industry can sustain in-Service major weapons systems in-country.
   b. To maintain a systems-of-systems integration capability.
   c. To support specialist industrial skills where they contribute to sensitive or sovereign requirements, or where they can be exported or inserted into a global supply chain.

23. **Sustainment**
   a. Ensuring the sustainment of in-Service major weapons systems can be achieved by identifying and acquiring appropriate IP (*i.e.* that necessary for sustainment) as part of the system acquisition contract.
   b. The existing Australian Industry Capability (AIC) program should be targeted to sustainment requirements.
c. The AIC program can also be used for development of specialist products where the vendor is unable to provide adequate direct sustainment capability.

24. System-of-systems Integration
   a. System-of-systems integration skills are developed and maintained primarily by well-supervised on-the-job training of qualified and experienced system engineers.
   b. This is best accomplished by industry but in an environment of predictable work demand and long-term contracts to justify the investment in training.
   c. Various industry skilling programs funded by Defence have not proved to be useful in the past and this funding could be directed elsewhere.
   d. For example, domain and sub-system knowledge, and system-of-system integration experience for a new weapons system would be better acquired by early engagement of Australian engineers and scientists on the program in the country of origin with this activity subsidised by the Commonwealth.

25. Specialist Industrial Skills
   a. The mechanism of PICs and SICs has been unsuccessfully used in the past to attempt to sustain specialist industrial skills.
   b. Rather than this separate parallel activity, specialist industrial skills should be considered as an integral part of the sustainment of major weapons systems.
   c. Their impact on sustainment is through their sensitive or sovereign features, or because they are part of the requirement for responsiveness to operational requirements.
   d. Most specialist industrial skills fall into the C^4ISREW domain either as stand-alone (e.g. HF radar) or embedded in platforms (e.g. many EW systems).
   e. Hence they tend to be ‘enabling’ or joint industrial skills without strong Capability Manager advocates and champions.
   f. These are the capabilities that need start up supplementary financial support to transition from low to high TRL.