Final Version

SENSITIVE PROPRIETARY INFORMATION
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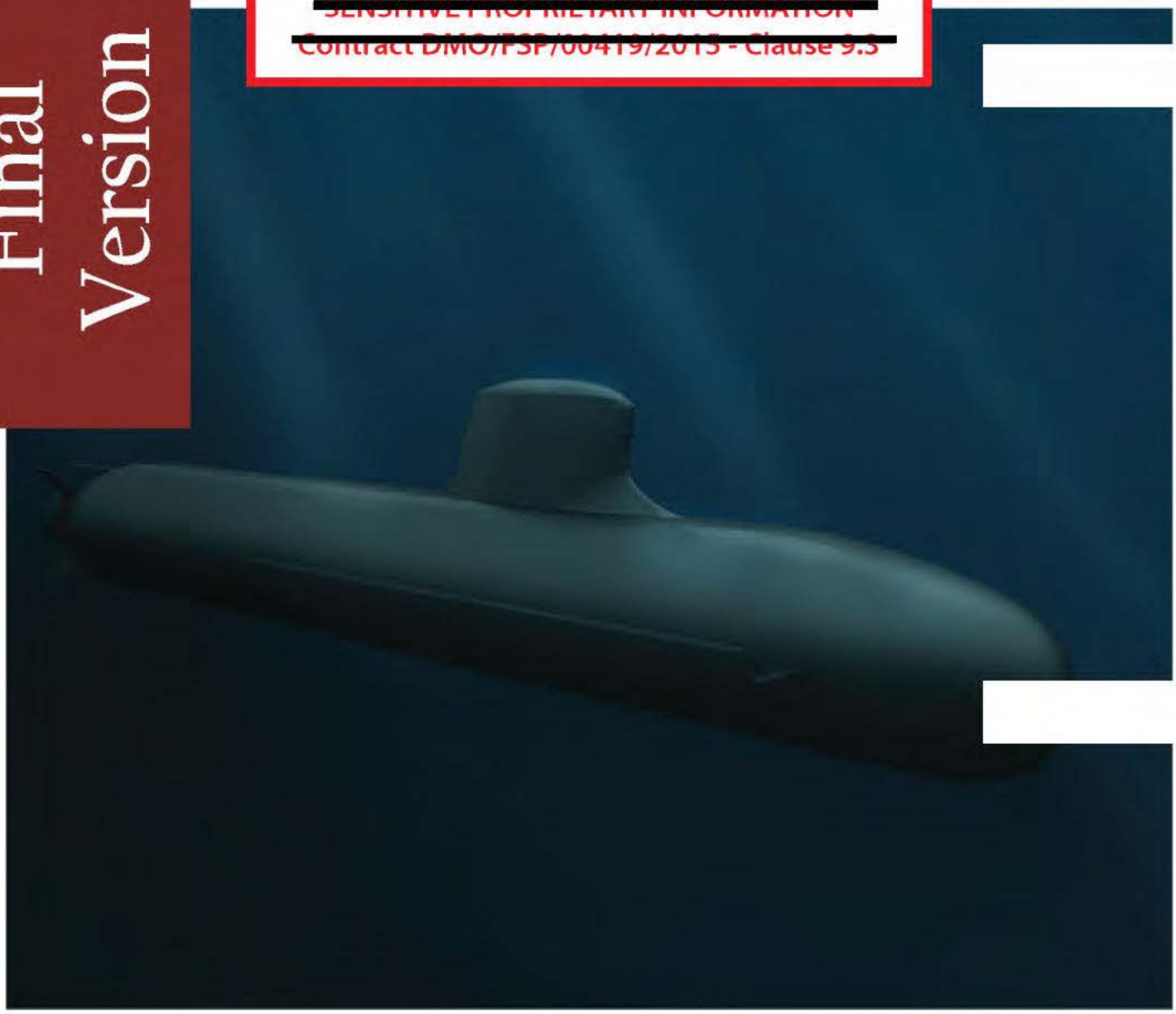

17: Australian Industry Plan

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DCNS

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SEA 1000 PROJECT

CDRL 17. Australian Industry Plan

	Name	Date
Drafted by	s47G, s33(a)(iii)	November 27, 2015

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Summary

DCNS's vision is to create a sovereign and sustainable industrial base within the Australian Future Submarine Enterprise to deliver innovative solutions over the life cycle of the submarine.

In this Australian Industry Plan (AIP), DCNS describes how we will:

- Maximise the involvement of Australian Industry in its procurement process in all three phases of the FSP; and
- Ensure Australian sovereignty in the sustainment phase of the Future Submarine Program (FSP).

DCNS will use a strategy of knowledge transfer, purposeful application of this knowledge and cultivation of the innovation environment to ensure the Platform System Integrator (PSI) and the Combat System Integrator (CSI) can access an Australian industrial base to deliver whole warship performance to the CoA and enable the sovereign operation and sustainment the Future Submarine.

With leadership from Defence, the PSI and the CSI, this industrial base can perform high value roles in the Design, Build and Sustainment phases of the program delivering superior benefits for our stakeholders and achieve value for money.

In execution, DCNS will transfer knowledge from the French sovereign submarine industry to Australia through the Commonwealth. In consultation with the CoA, we will create the industrial capabilities within the Enterprise necessary for sovereign operation and sustainment of the Future Submarine Capability.

DCNS's principal role is the PSI whereby we will manage the platform system elements of an AIP and cooperate with a CSI to deliver whole ship performances. The PSI works with the CoA to identify what knowledge is required to be transferred for what purposeful application within the Enterprise and then executes various initiatives to establish the scientific, technical or industrial capability. This role commences in the design phase of the program and becomes enduring. Ultimately we will transfer the PSI capability to the CoA preferred Australian Sustainment Organisation (ASO).

The plan demonstrates our understanding of the existing industry capabilities in Europe and Australia, the critical needs and imperatives of the Royal Australian Navy, the mechanisms to

transfer technology, and the methods through we will monitor and maintain the health of the Enterprise stakeholders on whose contribution the PSI and the CoA depends.

The plan sets strategic objectives to realise our vision and demonstrates how DCNS will deliver them:

- Provide industrial capability within Australia, on an enduring and sustainable basis, necessary to meet defined targets of availability and capability. DCNS will achieve this through a strong and flexible process to transfer technology and knowledge, and a design approach that considers sustainment from the outset;
- Successfully transfer a sovereign Australian Future Submarine PSI capability to the Commonwealth's nominated ASO before the arrival of the first FSM in Australia by applying technology transfer mechanisms to suppliers;
- Reduce the total cost of ownership of the Future Submarine capability to the lowest realisable level through the development of long-term strategic partnerships with suppliers and through the creation of an innovation environment for industry;
- Create an innovative culture within the Australian Future Submarine Enterprise by developing R&D cooperation, nurturing the industrial base and creating Centres of Excellence. These will draw together Industry, Research Institutions and Government and seek to grow companies into adjacent industries, reducing dependence on the FSP through diversification; and
- Create high value opportunities for Australian Industry in all phases of the FSP by focusing on a tailored procurement process taking into account Australian industry capability and on transferring knowledge to Australia.

s47G, s33(a)(iii) [redacted]

s47G, s33(a)(iii) [redacted]

this information is displayed in the Candidate Project List (Appendix C) prepared in the CEP phase of the FSP.

DCNS proposes to establish technology-specific Centres of Excellence (CoE) to provide an enduring presence in Australia for industry capabilities and skills required for all phases of the FSP. CoE provide real and meaningful methods for the creation of an innovation culture and collaboration amongst Enterprise stakeholders. In the role of PSI, DCNS proposes to consult closely with the CoA, using the AIP Candidate Project List, to determine the application and research directions of CoE.

To illustrate the concept of Centres of Excellence, DCNS suggests five test cases of Centres that could be developed in the NSP:

- The Hull Material and Welding Centre of Excellence;
- The Hydrodynamics Centre of Excellence;
- The Composite Materials Centre of Excellence;
- The Energy Optimisation Centre of Excellence; and
- The Marine Growth Corrosion Centre of Excellence.

Similarly, other centres dedicated to the technology areas identified in § 4.1 will be considered for establishment.

1 Purpose and Scope of the Document s47G, s33(a)(iii) FOUO)

1.1 Purpose of the Document

The AIP describes DCNS's approach to establish a strong supply chain for the Future Submarine (FSM) that meets Australia requirement for sovereign sustainment. The plan also describes how DCNS will maximise Australian industry involvement in an innovation environment developed for the purpose of the FSP. It identifies labour, materials and associated categories of service available within Australian industry to support the FSM across the three build options defined in [R1] – BS:

- Overseas Build;
- Australian Build; and
- Hybrid Build.

1.2 Background and Assumptions

The AIP uses DCNS experience in providing a sovereign industrial capability to the French Navy and the 'Direction Générale de l'Armement' as well as previous Technology Transfer programs to countries such as India, Malaysia, Chile and Brazil to meet the unique requirements for Australia.

DCNS assumes the function of the Future Submarine PSI, as the proposed manager of the AIP, will lodge in the CoA's selected ASO and that DCNS will perform a Transfer of Technology (ToT) to this organisation.

s47G and s33(a)(iii)

[redacted]

1.4 Applicable Documents

[A1] The Study Into the Business of Sustaining Australia's Strategic Collins Class Submarine Capability – Mr John Coles

1.5 Definitions

The following key terms are used throughout this document:

Table 1. Key Terms

Key Term	Meaning
Acquisition	Refers to all the FSP activities until commissioning of the FSM.
Australian Build	The Future Submarines will be constructed predominantly in Australia.
CEP (Competitive Evaluation Process)	Refers to the phase of the SEA1000 Program preceding the FSP, consisting of the pre-design of a submarine (FSM) and the definition of associated services.
Design Authority	An entity (corporation) formally designated as responsible and guarantor for the final product in the specified field of employment, safety, compliance with applicable regulations and technical performance overall as specified by the customer. The Design Authority alone may validate the design, declare conformity of the end product compared to the validated design and to allow a change with respect to the original design, for areas that could impact the security, safety and product performance.
FSM (Future Submarine)	Means the submarines to be acquired by the Australian Government for service in the Royal Australian Navy under the Future Submarine Program.
FSP (Future Submarine Program)	Means the Commonwealth's SEA 1000 Future Submarine Program.
Hybrid Build	The Future Submarines will be constructed to the extent defined in CDRL 01 in both France and Australia.
Overseas Build	Build strategy in which all the submarines of the FSM fleet are built in France.
SEA1000	Project conducted by the Commonwealth of Australia and aiming at designing, building and sustaining a fleet of submarines to succeed the Collins Class Submarines.
Sustainment	Refers to upkeep (maintaining a seaworthy submarine through planned and corrective maintenance), update (addressing emerging obsolescence and supportability issues), and upgrade (modifying the submarine as needed to address emerging threats through improvements to the capability of the submarine).

2 Overview s47G, s33(a)(iii) – FOUO)

2.1 DCNS's Vision for Australian Industry

DCNS's vision is to create a sovereign and sustainable industrial base within the Australian Future Submarine Enterprise to deliver innovative solutions over the life cycle of the submarine.

2.2 DCNS's Strategy to realise this Vision

DCNS will use a strategy of knowledge transfer, purposeful application of this knowledge and cultivation of the innovation environment to ensure the PSI and the CSI can access an Australian industrial base to deliver whole warship performance to the CoA and the sovereign operation and sustainment the Future Submarine.

With leadership from Defence, the PSI and the CSI, this industrial base can perform high value roles in the Design, Build and Sustainment phases of the Program delivering superior benefits for our stakeholders and achieve value for money.

In execution, DCNS will transfer knowledge from the French sovereign submarine industry to Australia through the Commonwealth of Australia (CoA). In consultation with the CoA, we will create the industrial capabilities within the Enterprise necessary for sovereign operation and sustainment of the Future Submarine Capability.

DCNS' principal role is the PSI and we propose to manage the platform system elements of an AIP and cooperate with a CSI to deliver whole ship performances over the submarine life cycle. The PSI will work with the CoA to identify what knowledge is required to be transferred for what purposeful application within the Enterprise and then execute various initiatives to establish the scientific, technical or industrial capability in Australia. This role commences in the design phase of the program and becomes enduring. Ultimately we will transfer the PSI capability to the CoA's preferred ASO.

DCNS proposes to work in close partnership with the CoA and the CSI to deliver the strategic objectives of this plan working at a whole of Enterprise level. DCNS will transfer knowledge, meaning not only the 'know what' but also the 'know how' and as required the 'know why', from the French submarine industry to Australia through the Commonwealth.

The strategic objectives in this plan are to:

1. Provide the industrial capability within Australia, on an enduring and sustainable basis, necessary to meet the CoA's defined targets of FSM availability and capability;
2. Create high value opportunities for Australian Industry in all phases of the FSP;
3. Reduce the total cost of ownership of the FSM capability to the lowest realisable level;
4. Successfully transfer a sovereign Australian Future Submarine PSI capability to the CoA nominated ASO before the arrival of the first FSM in Australia; and
5. Create an innovative culture within the Australian Future Submarine Enterprise.

This AIP recognises the inescapable challenges Australia faces in terms of geography, cost and the size of the Australian industrial base. DCNS proposes specific measures and initiatives to address these challenges including the creation of Centres of Excellence

combining the capabilities of all stakeholders in the key technology domains of the Enterprise.

This strategy is enforced through a specific procurement approach including sustainment imperatives at the very start of its development. The procurement process is described in Appendix A and the outcome of the analysis performed during the CEP at Appendix C: s47G, s33(a)(iii) [redacted]

2.2.1 Why Innovation?

Drawing from our experience as a principal participant in the French naval enterprise, DCNS is of the view that the successful performance of the Australian PSI is dependent on access to supporting competencies, capabilities and sources of supply from within Australia and overseas.

DCNS has now completed a thorough survey of the Australian industrial base and discovered instances where an industrial capability necessary to support the Future Submarine is either presently in existence, will need to be further developed from this existing base, or established afresh. In every case industrial capabilities must be continuously improved over the long term for the strategic objectives of the AIP to be met.

To perform the role of PSI, DCNS will need to draw on these industrial capabilities at various levels of frequency and depth. Commonly, DCNS's own calls on supply from certain technology sources as the FSM PSI will be too infrequent or insufficient to create sufficient demand to maintain and develop the industrial capability. And even where DCNS' own demand is sufficient to maintain a capability, the Australian Future Submarine Enterprise must still reach out and benefit from the lessons and knowledge developed from tangential applications of technology and marketplaces.

Only through the application of knowledge into new endeavours in the adjacent markets and domains related to submarine technology can the capabilities of Future Submarine Enterprise participants remain relevant and strong enough to support the PSI. Through innovation, the industrial participants in Australia's sovereign Enterprise will present new solutions to the problems and opportunities confronting the PSI over the FSM life cycle. In this industry the PSI is supported by the participants in return for the PSI fostering the innovative industry and the AIP manager. This is why the Future Submarine Enterprise must be innovative.

2.2.2 Creating Innovation in the Future Submarine Enterprise

The foundations of innovation are knowledge, purpose and environment.

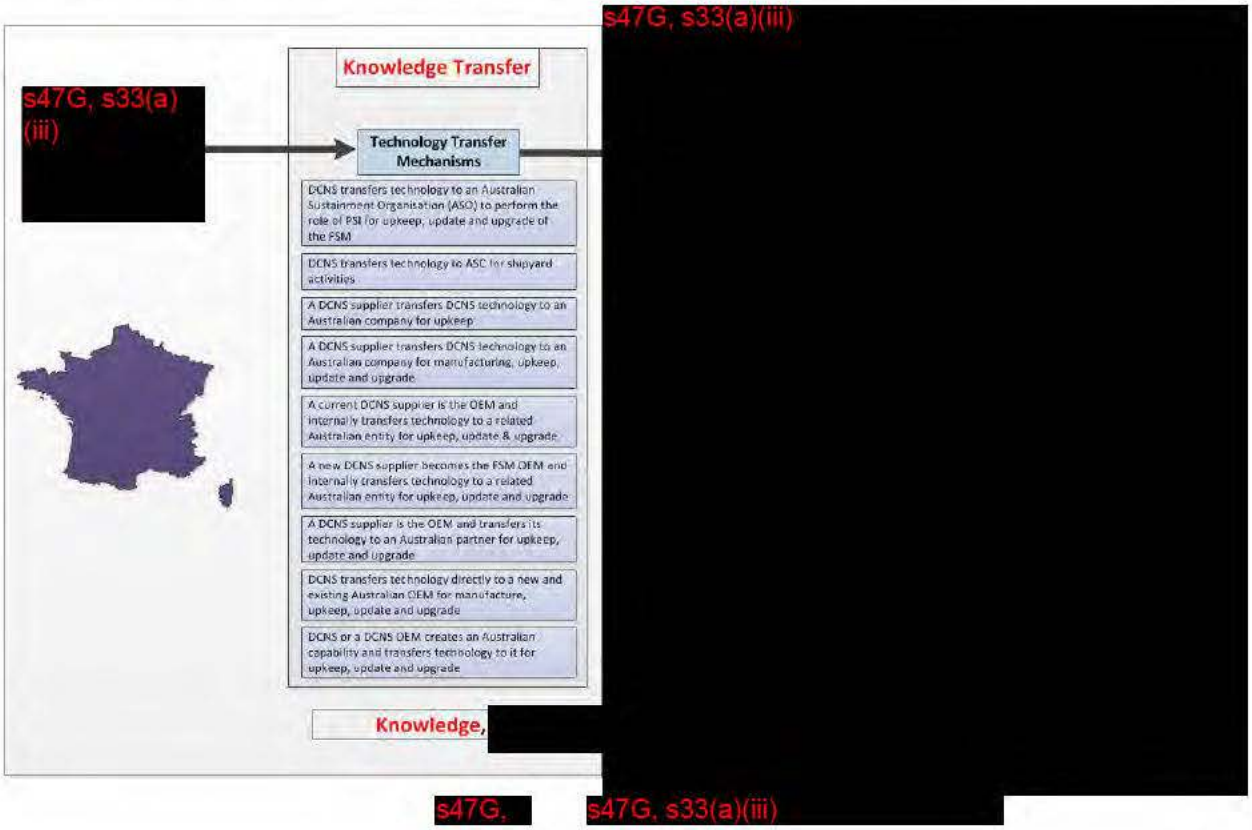
Innovation requires knowledge at the fundamental level. Knowledge at the fundamental level is the combination of 'know-how' and 'know-why'. Without knowing how something occurs and knowing why it is so, these foundations are replaced with simple 'know-what' and innovation is lost in place of imitation, improvisation or process adherence. Ultimately, where innovation is attempted without 'know-how' and 'know-why', risks to safety arise.

Innovation must have a purpose. It is performed for the creation of benefits for stakeholders. In the case of sovereign operation and sustainment of the Future Submarine, the purpose of innovation is to maintain an autonomous and enduring industrial base to create benefits including reduced the cost of ownership, availability, reliability and a regionally superior submarine capability for the Royal Australian Navy (RAN).

With knowledge and purpose, innovation can be realised from an environment comprising human and other resources, capital, open communication and, above all, leadership. Leadership can occur on multiple levels within the Enterprise. From time to time leadership may be found in prime contractors, tier-2 suppliers, government organisations and other stakeholders within the Enterprise. Within this ecosystem there will by necessity principal roles for the CoA, the PSI and the CSI.

2.2.3 Establishing the Environment

To enable the ToT (knowledge) in the Design, Build and Sustainment phases, Australian suppliers and other potential participants will start building the Innovation Environment as soon as DCNS is selected as the International Design Partner. Specific initiatives are described in § 3.3.2 and Appendix D, and include training Australians at the 'DCNS Universeaty', partnerships between French and Australian companies, development of or contribution to Centres of Excellence with submarine-specific themes and other activities to nurture small-medium enterprises so as to assist them to transition into adjacent industries.



2.3 The Role of the Platform Systems Integrator

In service to the French Direction Générale de l'Armement and Navy, DCNS has developed a business operating model and a culture that provides complete support system solutions for an operational end user of large ocean going submarines. DCNS reference for understanding the CoA's needs of a PSI are derived from our experience as the provider of capable, available, reliable and affordable submarines to the French Navy from a readily accessible industrial base as well as our analysis of the Australian experience in the Collins Class.

Learning from this experience, we have carefully considered the needs of the CoA in the FSP and how Australian industry can best support the Future Submarine Enterprise.

DCNS proposes the role of the PSI in all phases of the FSP include responsibilities that are undertaken at the industrial level to deliver whole warship performances of the ship's life cycle and achieve the strategic objectives of the AIP. The CoA may also consider the merits of introducing a similar role with associated responsibilities for the CSI and the PSI and CSI may cooperate in a way that is consistent with the higher level commercial delivery model of the Enterprise.

s47G, s33(a)(iii)

2.3.1 Managing the Australian Industry Plan

Looking ahead to the operational and sustainment phase of the Australian FSP, DCNS has identified a risk that the scientific and industrial base in Australia may not be able to supply the requisite knowledge, goods and services to the Australian Future Submarine Enterprise in order to maintain the sovereign operation and sustainment of the Future Submarine. DCNS proposes the CoA allocate this risk to the PSI and the PSI manages it through the AIP. The PSI is best positioned to manage this risk because the PSI has both knowledge of the platform system and has responsibility for commercial management of the suppliers of goods and services for all phases of the FSP.

The PSI is therefore best placed to transfer knowledge, for a clearly understood purpose in support of the FSP to a selected Enterprise participant and then play a role in sustaining this industrial capability. DCNS proposes the CoA take close oversight of this risk. We propose several consultative mechanisms with the CoA in this plan as we work through critical areas of technology transfer, the development of contractual requirements, supplier selection and procurement, and continuous improvement and innovation with this ecosystem. The responsibilities of the PSI extend to the management of all of the industrial elements of a support system and also involve significant cooperation with non-industrial actors in the private sector, the technical and scientific sector, education providers and the CoA itself. DCNS also proposes the role of AIP manager be transferred to the CoA nominated ASO in accordance with the ToT program and the establishment of an enduring Design Authority for the Future Submarine.

2.3.2 PSI and Commonwealth Roles, Responsibilities and Collaboration

The PSI works with the CoA to identify what knowledge is required to be transferred for purposeful application within the Enterprise and then executes various initiatives to establish the scientific, technical or industrial capability. To meet the strategic objectives of the AIP, DCNS proposes the PSI takes on the following responsibilities:

- Identify the technologies, priority systems and equipment items necessary to deliver sovereign operation and sustainment as defined by contractual requirements set by the CoA. (UUC delivery, operational performance, etc.);
- Oversee the ToT from existing DCNS suppliers and partners to Australia;
- Continuously monitor the effectiveness of the ToT mechanisms used and improve them as required;
- Continuously assess the industrial health and capability of PSI suppliers and partners, in all sectors, necessary to support the sovereign operation and sustainment of the Future Submarine;
- Develop and manage initiatives to create innovation and collaboration across the Enterprise, through the establishment of an Innovation Environment; and
- Commercial management of Enterprise participants to achieve value for money for the CoA.

In all phases of the FSP Australian Industry will acquire knowledge, technology and skills through ToT programs. The costs involved in this process are incurred in return for benefits to the program in the present and future phases. DCNS proposes to control costs through collaboration with suppliers and partners by developing ToT program business cases where TOT is performed in one of the identified mechanisms. When not implementing ToT programs itself, the PSI will support its suppliers in this task.

DCNS' intention is to go beyond the mere contractual relationship with its suppliers and build strategic relationships with them through such initiatives as Innovation Cluster and/or the Centres of Excellence. These initiatives also have the effect of creating new solutions to the Enterprise needs and fostering continuous improvement. This method supports existing Enterprise participants but also encourages new suppliers and the creation of new opportunities.

The PSI will establish collaborative behaviours throughout the Enterprise through adoption of CoA partnering principles and will create the culture of honest engagement and best for program behaviours among all of our stakeholders. Ultimately, where an Enterprise participant is not able to continuously improve and create new benefits from given resources and technology transfer, DCNS will consult with the CoA on mechanisms such as developing alternate sources of supply. Ultimately, DCNS will deal with underperformance within the Enterprise commercially.

Using the Candidate Project list, the PSI and the CoA are able to consult and collaborate on what measures will be taken to maintain the health of the industrial capabilities needed in Australia to deliver sovereign operation and sustainment, as assessed by their global importance.

Where measures include procurement decisions, DCNS proposes the PSI procure equipment, systems, material and services in order to meet its responsibilities as the manager of the AIP. Once procurement activities commence, the CoA will be further consulted in accordance with the procurement Responsibility, Accountability, Consultation and Information (RACI) matrix in order to satisfy itself that value for money in procurement activities considers the strategic objectives of the AIP.

s47G and s33(a)(iii) [redacted] Procurement decisions are of course but one tool available to the CoA and the PSI in the AIP to maintain industry capability and of themselves do not create innovation or sovereignty. As illustrated below, DCNS as the PSI will use all of the capabilities with our own company to execute our responsibilities and deliver the strategic objectives of the AIP.

s47G, s33(a)(iii) [redacted]

2.3.3 Using Strategic Communications for Enterprise Collaboration

The PSI plays a leadership role alongside the CoA in engaging with Industry, academia and other research institutions to monitor progress and set targets for future achievements.

To that end, DCNS will establish an annual conference to support the Future Submarine Enterprise Industry Plan. The conference would be held in conjunction with annual Government to Government meetings and would seek to include both platform and combat system stakeholders. The first example of such a conference was the Industry Leaders' Forum, hosted by the President Director-General of DCNS SA in Adelaide, Australia on 18 November 2015.

3 Transferring Knowledge and Intellectual Property s47G, s33(a) – ~~FOUO)~~

DCNS proposes to work in close partnership with the Commonwealth to transfer knowledge, meaning not only the 'know what' but also the 'know how' and as required the 'know why', from the French submarine industry to Australia through the Commonwealth.

The TOT mechanisms meet the AIP strategic objective to:

- Successfully transfer a sovereign Australian Future Submarine PSI capability to the Commonwealth's nominated ASO before the arrival of the first FSM in Australia.

3.1 Description of Nine TOT Mechanisms

DCNS has defined nine mechanisms to transfer technology. ToT comprises all things necessary for an industrial capability in accordance with the Vision and includes such things as Intellectual Property (IP), 'know-how', 'know-why' and the means of production. The nine mechanisms are:

- s47G and s33(a)(iii)

2. DCNS transfers technology to ASC for shipyard activities:
   - s 47G and s 33(a)(iii)
   - Example: DCNS to ASC.
3. A DCNS supplier transfers DCNS technology to an Australian company for upkeep:
   - s 47G and s 33(a)(iii)
   - Example: Air conditioning units. Design is resident with DCNS. The items are built by SNORI for DCNS. They will be maintained in Australia by Johnson.
4. A DCNS supplier transfers DCNS technology to an Australian company for manufacturing, upkeep, update and upgrade:
   - s 47G and s 33(a)(iii)
   - Example: Hydraulic manifolds. Design is resident with DCNS. The items are built by Issartel. Issartel then transfers manufacturing capability to H.I. Fraser.
5. A current DCNS supplier is the OEM and internally transfers technology to a related Australian entity for upkeep, update and upgrade:
   - s 47G and s 33(a)(iii)
   - Example: Diesel engines. MTU to Penske Power Systems.

6. A new DCNS supplier becomes the FSM OEM and internally transfers technology to a related Australian entity for upkeep, update and upgrade:
   - s 47G and s 33(a)(iii)
   - Example: Weapon Launching Tubes. Babcock UK to Babcock Australia.
7. A DCNS supplier is the OEM and transfers its technology to an Australian partner for upkeep, update and upgrade.
   - s 47G and s 33(a)(iii)
   - Example: Main pumps. FAPMO to Pump Technologies.
8. DCNS transfers technology directly to a new and existing Australian OEM for manufacture, upkeep, update and upgrade:
   - s 47G and s 33(a)(iii)
   - Example: Accommodation. Taylor Bros will design the accommodation modules according to DCNS requirement and will ship them to Cherbourg for the submarines built in France.
9. DCNS or a DCNS OEM creates an Australian capability and transfers technology to it for upkeep, update and upgrade.
   - s 47G and s 33(a)(iii);
   - Example: Propulsion motor. Jeumont has not yet established a presence in Australia (this represents an opportunity).

3.2 Intellectual Property Flow

DCNS SA, DCNS Australia and ASC will place procurement demands on the suppliers, taking into account their location and commercial or industrial circumstances. In each procurement order, an IP flow will be initiated. The rights will be transferred to whoever has signed the contract initially through DCNS SA, DCNS Australia or ASC. All the negotiated rights, however, will be transferred to the CoA at the end.

s 47G and s 33(a)(iii)

s47G and s33(a)(iii)

s47G, s47G, s33(a)(iii)

3.3 ToT Readiness Level Definition

DCNS has identified a number of Australian suppliers at Appendix C that could become involved in the FSM supply chain. Their level of readiness to accept ToT and become DCNS suppliers varies and can be ranked in three categories: Mature, Intermediate or Undeveloped. This assessment relies only on a first overview of the various companies' capabilities.

- **Mature**: When the Australian supplier's capability is considered adequate to provide equipment or services required in the FSM supply chain;
- **Intermediate**: When the Australian supplier's capability is considered partially adequate. The level of effort required in the ToT program to bring the supplier to the right level is more significant than at the mature level; and
- **Undeveloped**: When the Australian supplier's capability is considered insufficient. The ToT mechanism and effort required to bring the supplier to the right level is important.

This ToT readiness level is part of the global assessment process described in § 5.1.

3.3.1 Obtaining DCNS Suppliers' Commitment to Technology Transfer

Technology Transfer and IP management from all DCNS suppliers, as well as those stakeholders and actors who will enter the Enterprise in years to come, will contribute to meeting Australia requirements for sovereign sustainment. s47G, s33(a)(iii)

s47G, s33(a)(iii)

s47G, s33(a)(iii)

[redacted]

3.3.2 DCNS Suppliers Commitments made in the course of the CEP

In the context of the CEP, DCNS has already received expressions of commitment from its existing suppliers (such as Jeumont Electric, Schneider Electric, Sagem and many others) to support DCNS efforts to create a sovereign and sustainable industrial base for the FSM in Australia. This commitment includes of course delivering the necessary supply, but also setting in place Transfer of Technology programs and contributing under the management of DCNS to the creation of an innovation environment in Australia.

s47G, s33(a)(iii) [redacted] currently working with Business France Australia, the French government agency in charge of helping French companies accessing the Australian market, to set up an enduring presence in Australia and building up a local supply chain. Similarly, s47G and s33(a) [redacted] s47G, s33(a)(iii) [redacted] and stated its intention to be part of the FSM supply chain in Australia, building on its recent achievements in contributing to DCNS supply chain s47G and s33(a)(iii) [redacted] In a typical Tier 2 to Tier 2 type of arrangement, that would involve partnering with an Australian company s47G, s33(a)(iii) [redacted]

4 Creating the Innovation Environment [redacted] – FOUO)

The initiatives proposed in the innovation environment meet the strategic objective to:

- Provide the industrial capability within Australia, on an enduring and sustainable basis, necessary to meet the CoA's defined targets of Future Submarine availability and capability; and
- Create an innovative culture within the Australian Future Submarine Enterprise.

DCNS will create an innovation environment in partnership with several stakeholders and through many initiatives, including sponsorship of research and development, academic exchange, Centres of Excellence, and supporting small-medium enterprises to grow into adjacent industries to become sustainable and innovative businesses.

4.1 Creating R&D Opportunities through the AIP

Knowledge, with purpose and environment, is the foundation for innovation. Higher Education organisations and Research Centres create, enhance and disseminate knowledge. In this regard, Australia's strong higher education industry is an asset the PSI can draw on and expand for the benefit of technology areas related to the FSM and beyond.

As part of its role in setting in place and managing an innovation environment in Australia, the PSI will create or strengthen links between:

- DCNS and research organisations in Australia; and
- Research organisations in France and in Australia.

To facilitate this, the PSI will be able to use DCNS Research, the R&D department within the DCNS Group. DCNS Research is organised along three naval research centres:

- [redacted] the research centre for performance, resistance and dynamic behaviour of materials and structures at sea;
- [redacted] providing advanced R&D and multi-domain knowledge in naval hydrodynamics, control-command systems, experimental technologies, multi-disciplinary optimisation and power processes; and
- [redacted] the research centre for information dominance, cyber defence, signatures management, stealth technologies and secured complex systems.

DCNS Research has an existing knowledge of the Australian R&D environment. In November 2014, for example, [redacted] delegation was involved in the Inter Noise Conference, the 43rd International Congress on Noise Control Engineering, held in Melbourne. DCNS made three presentations at this conference.

As a result of this event and various other engagement activities, DCNS has identified potential areas of cooperation with universities and research centres. Cooperation can take various forms, including exchanges of PhDs, post-doctorate postings, cooperative R&D, as well as participation to larger projects like the ones performed in the context of the European Commission Horizon 2020 framework program. The DCNS approach to build long-term relationships with its partners has received very positive feedback from the organisations DCNS has been engaging with so far. The following table identifies the areas where there are existing contacts between DCNS Research and R&D organisations and where tangible partnerships have been discussed.

Table 2. Potential Area of Research Cooperation

Entity	Domain	Entity	Potential cooperation topics
University of New South Wales (NSW)	Acoustics	s47G, s33(a)(iii)	s 47G and s 33(a)(iii) Potential areas of cooperation are: barriers, stealth materials and smart skins, materials testing for characterisation and calibration; vibrations and radiated noise (modelling and performance prediction); propeller noise. s 47G and s 33(a)(iii)
University of NSW	s47G, s33(a)(iii)	s47G, s33(a)(iii)	s 47G and s 33(a)(iii) Potential areas of cooperation are: electrical protection s 47G and s 33(a)(iii) compact and energy efficient solutions; higher frequency converters with higher harmonic quality; application of smart grid solutions to finite networks and energy management on board; and wireless transmission of energy for underwater systems s 47G and s 33(a)(iii)
University of NSW	s47G, s33(a)(iii)	s47G, s33(a)(iii)	Potential areas of cooperation are: Particle filtering & advanced tracking, tracking of highly manoeuvring targets.
University of Technology Sydney (NSW)	s47G, s33(a)(iii)	s47G, s33(a)(iii)	s 47G and s 33(a)(iii) Potential areas of cooperation are: Smart Grid Command & control, applicable to Energy Conversion activity and Ocean Thermal Energy Conversion, HiSP Filtering for optimal control.
Australian Maritime College (TAS)	Hydrodynamics Naval Design & Maritime Engineering	AMC CRL RTCNDM	Ongoing stream of students from ENSTA Bretagne and Ecole Centrale de Nantes spending from 3 to 10 months at the AMC through internship programs. Potential areas of cooperation are: propeller design methods & optimization, including composite blades (ships, tidal systems), underwater explosions, vibro-acoustics, virtual ship, virtual test tank
Defence Materials Technology Centre (VIC)	Materials and processes	DMTC Collaborative Research Centre	Potential areas of cooperation are any material issues, like metallic materials and implementation (welding, bounding…), organic materials and composites, as well as corrosion.
University of Newcastle (NSW)	Marine Corrosion	Centre for Infrastructure Performance and Reliability	Potential area of cooperation are: Bacterial and microbiological corrosion

4.2 Research Centres

There is a number of existing Research Centres in Australia with which DCNS could be involved. One example of future centre, the Submarine Engineering Centre proposed by Monash University, is described below. Still at the early stage, this project could receive some input from DCNS in the NSP. In the longer term, once cooperation with Australia has reached a critical level, DCNS could also create a domestic Research Centre like it has done in other countries where it has long term ambitions such as Chile, Brazil, India, etc.

As presented by Monash University, the Centre would be industry-focused and would ensure Australia has the ongoing sovereign research, technological, innovation and skills capability to sustain the FSP over its life cycle.

The Centre would deliver:

- World-leading R&D in mechanical engineering, materials science and engineering, information technologies and industrial design for submarines in the Australian context; and
- Master of Advanced Engineering programs in reliability engineering and in systems engineering.

The s47G has already received support from the s47G for this project and agreement to participate from:

s47G

- DMTC.

s47G will draw on its experience on previous projects and on the support of the Defence Sciences Institute to associate suppliers to the Centre. s47G anticipates that the contender selected following completion of the CEP will be the principal industry partner to the project.

The main areas of focus of the Centre will be:

s47G

4.3 Major Areas for Cooperation

DCNS possesses significant strengths in certain areas of technology and management and these are opportunities for Australia and the FSM to benefit.

Table 3 describes these areas. They may lead to the creation of Centres of Excellence or for initiatives in the Innovation Cluster.

Subject	Background and Opportunities	Australian Context
Lithium-ion batteries	DCNS has been working on lithium-ion battery technologies for many years with different partners: s47G, s33(a)(iii) [redacted]	Many research initiatives are also occurring in Australia both in the defence space and in adjacent industries that could lead to technology breakthrough. The AutoCRC, part of the Cooperative Research Centre (CRC) Programme, is for example leading projects developing Li-ion technologies for the automotive industry, with the involvement of Universities such as the University of Wollongong, Swinburne University or UTS. PMB Defence has also been working for several years with CSIRO on new Li-ion technologies. s47G, s33(a)(iii) [redacted]
Cyber-security	With the rise of 'digital warships', DCNS recognises the cybersecurity of naval systems is of major strategic importance. In France, the 2013 White Paper on defence and national security clearly identifies cyber-threats as a major threat to national security s47G, s33(a)(iii) [redacted] .	s47G, s33(a)(iii) [redacted] s47G, s33(a)(iii) [redacted]
Complex Program Management	s47G, s33(a)(iii) [redacted] This process is aligned with the structure, rules and methods of the PMBoK (Project Management Body of Knowledge), Project Management Institute. DCNS is permanently improving its methods and rules, both internally and externally taking advantage of benchmarks with European major actors in the field of defence and aeronautic: s47G, s33(a)(iii) [redacted]	DCNS is looking to incorporate arrangements for fostering complex program management into its plan for Australian industry by way of contributing to and supporting institutions s47G, s33(a)(iii) [redacted]
Signature	For the past 40 years DCNS commitment in the field of ships and submarines acoustic performances has been continuous and	s47G, s33(a) [redacted]

Subject	Background and Opportunities	Australian Context
Management	considerable. It led to build a strong world class expertise which will benefit to SEA1000 project s47G, s33(a)(iii) [redacted]	s47G, s33(a) s47G, s33(a)(iii) [redacted]
Maintenance	As sustainment is a major DCNS activity, the Group looks at continuously improving its performances in this field. s47G, s33(a)(iii) [redacted]	DCNS would like to support initiatives in this field in Australia to apply COMPAS beyond the propulsion system in order to make it a complete vessel health monitoring system. A number of subjects would be of interest: • Sensors, Real time data collection; E-maintenance, remote control • On-board or on shore databases; • Artificial intelligence and data processing; • Modern MMI (virtual reality); and Improvements could be achieved through the involvement of ASC and companies involved in adjacent industries such as the rail or the shipping industry.

Table 3. Priority Areas for Cooperation

4.4 Nurturing the Industrial Base through two Initiatives: Innovation Clusters and Centres of Excellence

DCNS intends to use two mechanisms to nurture the Industrial Base:

- A bottom-up approach where DCNS creates an ecosystem where SMEs can present initiatives and receive funding from major companies according to strategic priorities through an innovation cluster; and
- A top-down approach where DCNS identifies a number of priority technology areas and sets up Centres of Excellence (CoE).

4.4.1 Innovation Cluster

The defence market is rich in skills, technologies and people. Ideas emerging from the different fields of education, industries and personal initiatives are often hampered by lack of funds. Even if ideas may have dual application (civil and defence) they often struggle to find a champion. To provide such a channel, DCNS intends to set in place a new organisation or join and support existing ones.

4.4.1.1 Overview

DCNS intends to gather the major Australian companies as sponsors in the Innovation Cluster, all of whom may be represented in a Steering Committee that will decide its strategy and themes. It will set strategic directions regarding good coordination and the consistency of the funding actions by the sponsors in the frame of the cluster and could draw on existing Australian Government initiatives in this regard[1]. Although the finer details of the organisation are still to be defined, key aspects would be:

- A team will be identified within the cluster to manage the yearly process of communication, of requesting/gathering subjects, of assessing the proposal and the follow-up of the use of the funds;
- Each sponsor may be able to fund alone with others one or more projects; and
- The cluster would allow up to 20 innovation projects which would be scheduled to last between 6 and 24 months.

4.4.1.2 Benefits

There would be many benefits for the sponsors:

- Access to collaborative funding and direct links with the spinoff company or SME trying to bring a solution into the field of the prototype or industrialisation;
- A process of clear and agile selection, gathering obvious stakeholders from different companies to stimulate discussion about the proposed project;
- Access to the achievements, internal use in the scope of the cluster, sharing the commercial benefits and the management of the IP; and

1 http://www.business.gov.au/grants-and-assistance/innovation-rd/InnovationAustralia/Pages/default.aspx

- Involvement in the definition of the Technology and Industrial Roadmap up to the business plan.

The other cluster participants would benefit through:

- Access to a skilled and engaged technical chair able to assess, mitigate, challenge the proposition, help to identify the gap, focus on the key point of interest and support an effective innovation process;
- The opportunities to build their business and grow into adjacent industries;
- Support, behind the incubation, to engage a prototype or an industrialisation activity; and
- Access to more important funding.

4.4.2 Centres of Excellence

4.4.2.1 Concept

DCNS intends to build Centres of Excellence (CoE) modelled on the Competitive Clusters established throughout France. Over 70 of these clusters are operating and DCNS is an active participant in three of them. The French Government website[2] describes competitive clusters as follows:

- A partnership, based around a specific theme and a specific region:
  - A competitiveness cluster brings together large and small firms, research laboratories and educational establishments, all working together in a specific region to develop synergies and cooperative efforts. Other partners may be brought in, such as public authorities, either local or national, as well as firms providing business services.
- Competitiveness clusters think big:
  - The goal of competitiveness clusters is to build on synergies and innovative, collaborative projects in order to give partner firms the chance to become first in their fields, both in France and abroad.

4.4.2.2 Presentation

DCNS proposes to establish technology-specific CoE to provide an enduring presence in Australia for industry capabilities and skills required for all phases of the FSP. CoE provide real and meaningful methods for the creation of an innovation culture and collaboration amongst Enterprise stakeholders. In the role of PSI, DCNS proposes to consult closely with the CoA, using the AIP Candidate Project List, to determine the application and research directions of CoE.

- The centres will be created at the beginning of the NSP and are maintained throughout the life of the Program. They gather the appropriate stakeholders, including industry firms, research centres, government bodies and universities;
- The existing French ecosystem would act as an input and a catalyst to the CoE, through the reinforcement or the creation of links between the French organisations and their equivalents in Australia.;
- On the industry side, Tier 1 and Tier 2 original DCNS suppliers and their Australian partners would contribute to the Centres through their R&D efforts and their production

2 http://competitivite.gouv.fr/home-903.html

and maintenance activities linked with the program. They would benefit, in return, from the Research bodies' activities and from the general advantages of being part of a network; and

- Outside of the industrial firms directly involved in the dedicated technology areas, adjacent industries will also invest in the Centres for R&D purposes whether financially or through human capital, anticipating returns on investment for their industry (e.g. technology breakthrough, productivity gains, etc.).

s47C

[redacted]

What will emerge from the centres is an enhanced and enduring Australian industry network delivering:

- Continuous technology capability and competitive improvement of the FSM suppliers;
- Enhanced economic viability though the access for FSM suppliers to export programs and other naval projects;
- Benefits to other Australian naval projects through the technology improvements achieved in the centres; and
- Companies involved in adjacent industries outside of the naval field benefit from the technology improvements achieved in the Centres.

To illustrate the concept of Centres of Excellence, DCNS suggests five test cases of Centres that could be developed in the NSP:

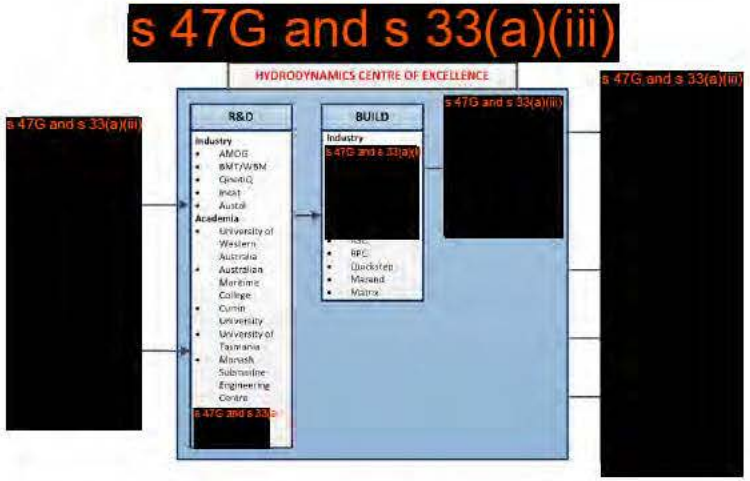
- The Hull Material and Welding Centre of Excellence;
- The Hydrodynamics Centre of Excellence;
- The Composite Materials Centre of Excellence;
- The Energy Optimisation Centre of Excellence; and
- The Marine Growth Corrosion Centre of Excellence.

Similarly, other centres dedicated to the technology areas identified in § 4.1 will be considered for establishment.

The capabilities, stakeholders, activities and outputs of the five proposed CoE are illustrated below.

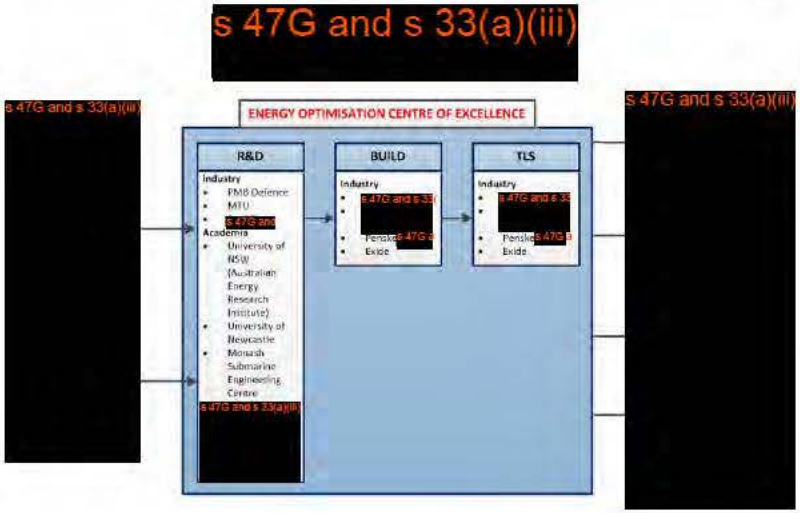
s 47G and s 33(a)(iii)

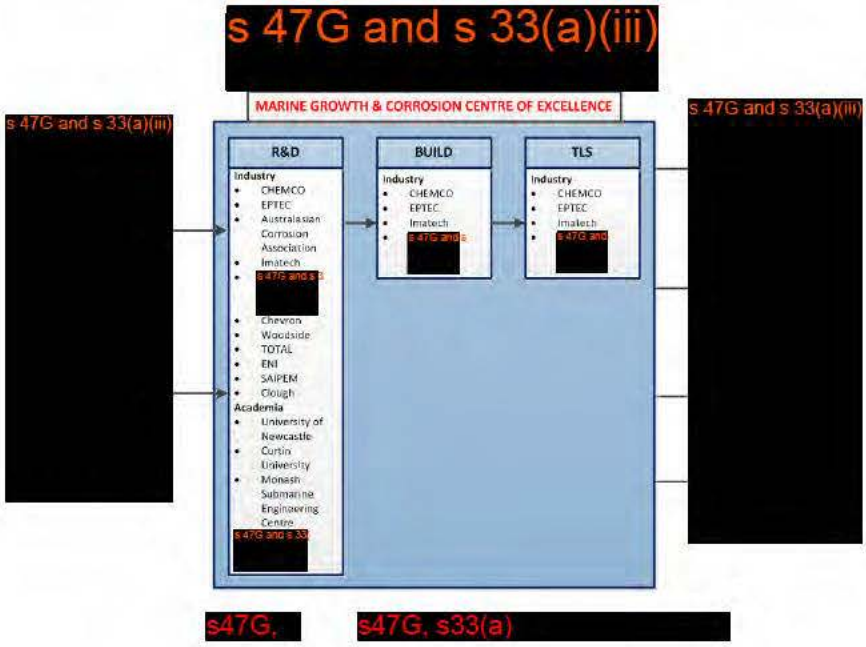
s 47G and s 33(a)(iii)



s 47G and s 33(a)(iii)

s 47G and s 33(a)(iii)





4.5 Education and Training Programs

4.5.1 DCNS Universeaty

DCNS is able to offer training solutions for Australia's naval industry workforce, from tradesmen through to technicians and engineers for conception, production and research. The transmission of knowledge is in DCNS' DNA and the Group's ambition, beyond the naval field, is to develop industrial skills in Australia. The service life of a vessel is forty (40) years on average, which is more or less the time span of an individual's career. Those who design and build ships will not be the same as those maintaining them over time. Passing on knowledge is essential for the sustainability of a naval force. And in a sense, DCNS has been practising on-the-job-training for more than 300 years, with senior staff members continuously training newcomers.

To better coordinate and manage all training related activities, DCNS has created in 2013 its own corporate university, named 'DCNS Universeaty'. The Group's approach to training involves a number of key points:

- 200 critical skills have been identified as being at the core of the Group's knowledge and have been linked to a network of over 600 experts within the Group;
- DCNS trainers are in operational positions within the Group and volunteer to give part of their time to training activities. They are therefore aware of the latest developments in their field of activity and attend special courses to be able to teach. This unique talent pool effectively covers all the specialisations within DCNS;
- 'DCNS Universeaty' advanced training courses can be delivered at the customer's premises or at one of DCNS sites in France or anywhere around the world. DCNS trainers can train the customer's own trainers or help them design and set up their own training infrastructures;
- Dedicated teams are built up for each project:
  - They manage the design of the training courses, ensure the smooth running of the lessons, and provide a permanent link between the client, the trainers and the other teams of DCNS Universeaty; and

s47G, s33(a)

To continuously improve its offer, DCNS Universeaty puts cooperation and partnerships with industrial firms, academic and training partners at the heart of its development. It relies on a training ecosystem made up of:

- The French training ecosystem
- Campus Naval France
- French Navy Training Centres
- The Jules Verne Manufacturing Valley

4.5.1.1 The French Training Ecosystem

The French ecosystem is illustrated at Figure 6

Figure 6. DCNS Training Ecosystem

4.5.1.2 Campus Naval France

Created by DCNS and the GICAN in 2012, Campus Naval France brings together industry and the training bodies of the French naval sector. It aims at optimising the training offers in the naval field and at answering the needs of industry. It is also helps DCNS remaining at the heart of the latest developments in the field of training. Campus Naval France objectives are to:

- Adapt and develop the organisation of professional training, which promotes access to employment;

- Generate skills related to the environment and to products (of the vessels, infrastructure and high-tech equipment); and
- Develop a network of exchanges between the different employment and training stakeholders including the Campus of trades and Qualifications Industries of the Sea.

4.5.1.3 French Navy Training Centres

The Group has a special links with the 'Ecole Navale' (Naval Academy), which trains officers of the French Navy. DCNS and the French Navy collaborate on training projects, such as a new e-learning module on cyber-security.

'DCNS Universeaty' also contributes to best practices exchanges with the 'Pôle Ecoles Méditerranée', another navy training centre dedicated to maintenance and operational activities.

4.5.1.4 The Jules Verne Manufacturing Valley

This French initiative has developed an open innovation ecosystem dedicated to advanced manufacturing. With 300 companies, 1,000 researchers, a campus of 2,000 students and a Fablab with 150 makers, this Technological Research Centre covers 4 strategic manufacturing sectors: aeronautics, automotive, shipbuilding and energy.

4.5.2 Generating Vocations to Develop an Enduring Skills Base

4.5.2.1 STEM-related Skills

In the tertiary education sector, Australia has a declining rate of Science, Technology, Engineering and Mathematics (STEM)-related course completions which have decreased over the past 10 years from 22% to 16%. Despite attempts by governments over the last decade to increase school student participation, the proportion of students commencing in STEM has flat-lined at around 10 per cent or less. At the same time, the Australian Bureau of Statistics has reported that STEM skills jobs grew at about 1.5 times the rate of other jobs in recent years: by 14% compared to 9% between 2006 and 2011. As a consequence, according to a 2014 survey conducted by the Australian Industry Group almost 44% of employers continue to experience difficulties recruiting STEM qualified technicians and trade workers. The main barriers are a lack of qualifications relevant to the business (36%) and a lack of employability skills and workplace experience (34%).

The FSP represents a unique opportunity to inspire vocations and offer the perspective to younger generations to contribute to a long-term Australian program with the highest level of technological complexity, and therefore to attract students into STEM. Having a sustainable and enduring skills base for high skills job will be paramount for the life of the program and will drive innovation in Australia as a whole. Capitalising on the attractiveness of a project the ambition of the FSP, DCNS as the PSI will take a number of initiatives to build up aspirations for a naval-oriented career.

4.5.2.2 Workplace Experience

Faithful to the French tradition of apprenticeship ("compagnonnage"), DCNS offers internships to around 250 graduate students with various backgrounds each year and 330 apprenticeships per year to graduate students with vocational and academic education.

DCNS also enjoys enduring relationships with the best French Engineering Schools such as Ecole Centrale Nantes, Ecole Centrale Lyon, Telecom Bretagne, ENSTA Paris, ENSTA Bretagne, Centrale-Supelec, etc. DCNS experts deliver technical lectures in these schools (for instance, in Centrale Lyon on acoustic discretion of submarines) and contribute to scientific chairs (e.g. 'Naval Cybersecurity' with Telecom Bretagne and the French naval academy, 'Complex systems engineering' with ENSTA Paris, 'Nuclear Security' with Mines Nantes).

As a result of this experience, DCNS has been made very well aware of the importance of building as many links as possible between the academic world and industry and of providing workplace experience to students or industry application opportunities to researchers.

DCNS Universeaty will therefore set in place programs in the FSP allowing for around 50 Australian graduate students per year to complete graduate programs or traineeships within the DCNS Group or its suppliers. The candidates will be young engineers completing their degree, PhD students or teachers researchers. They will discover the Group's workshops, shipyard and research centres spread out throughout the French territory (Paris region, Cherbourg, Brest, Lorient, Nantes-Indret, Ruelle, Toulon and Saint-Tropez). The trainees will be involved in exciting development projects and will have access to high level experts in their fields, in particular the 600 experts mentioned in § 4.5.1. The duration of these training programs would be a minimum of 6 months.

DCNS is already hosting PhD researchers on an opportunity basis. As an example, a teacher researcher on chemistry and corrosion from the AGH University of Science and Technology (Krakow, Poland), is currently embedded within DCNS Research in Cherbourg, working with DCNS experts to apply its academic research to industrial issues related to ships and submarine hulls, welding, materials, painting, etc. Making the most of her presence in France, DCNS is organising a seminar about corrosion in Cherbourg this month. This type of experience would be incorporated into the FSP.

4.5.2.3 Setting up Tailored Naval Engineering Degrees

DCNS has identified a number of universities such as s47G, s33(a)

which are already offering degrees in relation to naval engineering. A wide range of courses are available through these organisations. The FSP and other upcoming naval shipbuilding projects in Australia will naturally encourage students to choose these degrees, providing them tangible work opportunities for many years to come. In order to enhance existing degrees attractiveness and improve their relevance to the PSI needs in the NSP, DCNS will choose a tertiary education institution to partner with to tailor these degrees or build up new ones with particular emphasis on submarine-related subjects. French higher education institutions will also contribute to this partnership, giving the opportunity to use DCNS experts or teachers from these schools as contributors to the courses. This will also help offering the best possible curriculum.

DCNS Universeaty has experience in developing partnerships with local universities to create training programs:

- In Malaysia, in collaboration with two engineering schools, it is creating a Naval Master's Degree within a Malaysian University.
- In Brazil, it has established a partnership with Senai (a Brazilian organisation for professional training), Itaguai Construções Navais and the French Ministry of Education to set up technical training courses in subjects such as industrial maintenance, equipment handling, etc.

s47G, s33(a) [redacted] It offers a combination of face to face learning sessions and eLearning options. DCNS as the PSI also intends to extract some good practices out of this and contribute itself on its own site to the development of knowledge and the creation of a corporate culture and identity.

4.5.2.4 Secondary Education

DCNS recognises the benefits of equipping students with the employability skills and knowledge to prepare them for higher education systems described earlier. To that end, it intends to sponsor schools participating in the SUBS in Schools Program[3] developed by Re-Engineering Australia, Defence and a number of industry stakeholders.

The program is focused on engaging student interest in the technology of submersible vehicles and submarines and is built on the fundamentals of project-based learning. It is structured on the same underlying fundamentals successfully employed in the F1 in Schools™ (F1iS) program. F1iS has been successfully running in Australia since 2003 and has been proven to have a significant impact on the career decision choices of those students who take part.

DCNS will also seek to support other initiatives such as the shipbuilding-focussed vocational approach adopted by the Le Fevre High School in Adelaide, SA.

3 http://rea.org.au/subs-in-schools/

5 Establishing a Strong Australian Supply Chain s47G, s33(a) FOUO)

A strong Australian supply chain is fundamental to sovereign sustainment and to maximise Australian Industry Involvement.

5.1 Inputs

In order to achieve a sovereign submarine capacity in Australia two interrelated features are considered:

- An **operational imperative** to act in autonomy and to allow the RAN to carry out its missions; and
- An **industrial sustainment capability** for upkeep, update and upgrade of the FSM.

Operational independence is based on three main perspectives:

- **Performance**: gathering of the best available technologies will allow DCNS to deliver the most capable FSM;
- **Safety**: the ability to provide safe and effective equipment and also to provide rapid resupply should a safety-related defect occur; and
- **Reliability**: each supply will be assessed to provide a high level of reliability and with the aim of easing the physical management of the FSM.

Independent Sustainment has to be addressed on three levels:

- **Upkeep**: maintaining a seaworthy submarine through planned maintenance and the ability to support repair of defects;
- **Update**: addressing emerging obsolescence; and
- **Upgrade**: enhancing the FSM's operational capabilities as to meet emerging threats.

The inter-dependence between these features is illustrated at Figure 7.

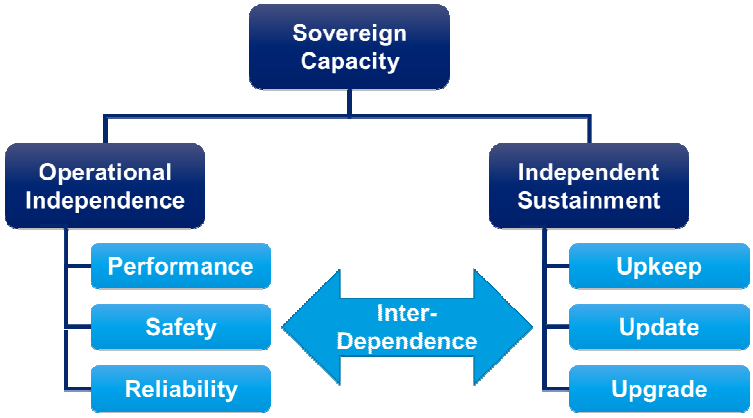


Figure 7. Approach to Sovereign Capacity

From an Australian industry perspective, this means an indigenous capacity to meet operational needs of performance, safety and reliability while also supporting the capability to sustain through upkeep, update and upgrade.

It is therefore important that systems in the submarines are developed with these sustainment imperatives in mind from the very outset. This requires a mapping of Australian capabilities and the identification of potential of gaps, by:

- Qualifying the reliable suppliers (companies with skills, experience, tools, process, performance, etc.); and
- Comparing with overseas suppliers to identify any Risks and Opportunities.

DCNS has made a preliminary assessment of the systems and activities that should be performed in Australia. The purpose of this assessment is to illustrate the extent of capability in Australia, provides a preliminary indication of the extent of Technology Transfer that will be required and indicates where DCNS believes the gaps exist in the Australian market.

From a list of systems and activities associated with design and the build of a submarine, made against criteria described in § 5.1.1, § 5.1.2 and § 5.1.3 for:

s47G, s33(a)

- Australian Involvement Imperatives; and
- Sustainment Importance;

The sustainment criteria are given the strongest weight as they incorporate assessments for Safety, Performance and Reliability, therefore reflecting the DCNS sustainment driven approach for the supply chain..

s47G, s33(a)

s47G, s33(a)

s47G, s33(a)(iii)

[redacted]

5.1.2 Australian Involvement Imperatives

Sustainment of any system is enhanced if the entities involved in the sustainment have know-how generated through involvement in the build. There are four (4) levels of importance that DCNS applies to consideration of Australian Industry Involvement (AII) in the context of the FSM:

- Crucial;
- Significant;
- Beneficial; and
- Helpful.

A score is applied on a sliding scale from 0-4 based on the effect of the following criteria:

- Improved know-how;
- The extent to which certainty of supply is guaranteed;
- The strategic imperative to retain or grow the capability in Australia; and

The vulnerability of the system to shelf-life and/or supply delays.

5.1.3 Sustainment Importance

In this approach, the essentiality of procurement activities including items and services with regards to sustainment are assessed. In accordance with criteria (impact on performance, safety and reliability) these activities are ranked in four (4) categories:

- **Essential**: Is Australian know-how essential for this equipment to be sustained?
- **Important**: Is Australian know-how important for this equipment to be sustained?
- **Highly Desirable**: Would sustainment outcomes be enhanced if there was Australian know-how for this equipment/system?
- **Desirable**: Would it be desirable for other reasons that this equipment/system was sourced from Australia?

5.1.4 Global Rating

Having assessed the systems using the criteria at § 5.1, the resultant table is sorted by Global Rating and AIP Capability Level (as explained at 3.3) so as to select the order of Priority Systems.

s47G, s33(a)(iii)

[redacted]

5.2.1 Australian Industry Management, Monitoring and Reporting

An overview of the particular management of procurement contracts with Australian Industry, including particular reference to DCNS' suppliers' commitment to involving Australian industry is provided below. Full details of the management, monitoring and reporting are at Appendix B.

AIP progress will be summarised through its reporting activity, and corresponding progress reviews. DCNS proposes this reporting to be performed via a dedicated CoA/DCNS progress group.

- The AIP Progress Group (AIPPG) will consider all matters relevant to the AIP;
- The CoA and DCNS will each appoint a permanent representative for the AIPPG; and
- For specific matters, DCNS and the CoA can add experts to support the AIPPG activities.

DCNS also proposes to use two different tools to monitor AII in the FSP:

- Candidate Project (CP); and
- Procurement Decision Proposal (PDP).

5.2.1.1 Candidate Project

During the FSP, and to meet the requirement of autonomy in the sustainment, numerous negotiations will be lead. Some issues about expectations regarding performance, skills, ToT and Intellectual Property (IP) may be known before reaching the base of final contracts between all the actors (CoA, DCNS and the Overseas/Australian suppliers).

To share and involve the CoA in the management progress of these issues, DCNS has assessed thanks to the multi criteria analysis explained in § 5.1, the procurement activities, including equipment and services. s47G and s33(a)(iii) [redacted]

s47G [redacted]

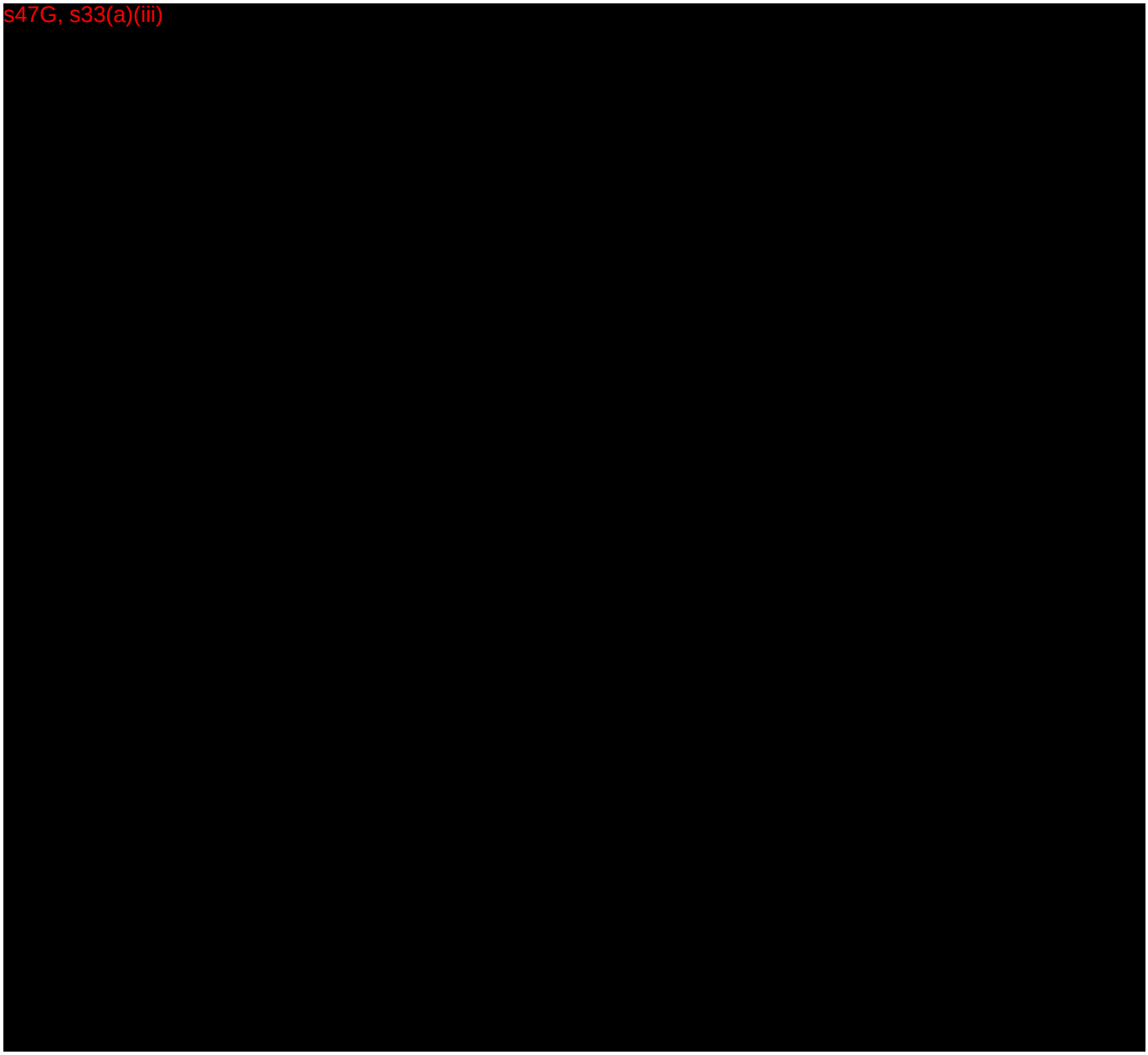
5.2.1.2 Procurement Decision Proposal

s47G and s33(a)(iii) [redacted] DCNS proposes to formalise a Procurement Decision Proposal (PDP) sent to CoA for acceptance. This document will present the project's achievements, justify the supplier's choice and highlight the IP and sovereignty status at the time of the delivery.

[redacted] s47G, s33(a) [redacted]

s47G, s33(a) [redacted]

s47G, s33(a)(iii)



s47G and s33(a)(iii)

[redacted]

s47G, s33(a)

5.2.4 Supply Chain Management

The main objective of the Supply Chain Management is to put all the materials and devices at the disposal of the shipyard in accordance with the technical requirements and with the submarines' construction schedule.

Therefore the supply chain management combines 'purchasing' and 'industrial equipment flow' management activities. This organisation is explained in [R3] – PMP: Supply Chain Management.

To reach the goal, a couple of actions are necessary:

- Manage the creation of the production Bill of Materials (BoM) and the master schedule;
- Define procurement policy for secondary equipment items;
- Set up master data for Master Resource Planning (MRP);
- Place order according the MRP results for secondary equipment items;
- Follow up the delivery of the critical and main equipment items;
- Receipt items, make the quality inspection, store and pick items according the shipyard or workshop demand; and
- Assure the support of the shipyard according emergency, scrap, over needs.

5.2.4.1 Bill of Materials Definition

The BOM is the master data of the Supply Chain Manager. It is built from engineering data and it conforms to the building process.

The creation of the BOM needs a cross work between process engineering, method and supply chain engineering method. The process engineering method defines the build

strategy which becomes the structuration of the BOM. Each level of the BOM represents a sub-assembly needed for the building of the submarine.

Each sub-assembly is fulfilled with all the items necessary for the realisation. The data is completed with the quantity. This quantity is defined by supply chain engineering; assuming the entire production margin (over length, scrap %, etc.).

5.2.4.2 Master Schedule

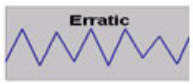
The master schedule defines the 'need' date to the supply organisation. For each level of the BOM, a date is defined. This coupling of BOM level and beginning date define the first date of the item requirement to the supply chain.

5.2.4.3 Define Procurement Policy

The procurement policy is applied to the secondary equipment items. For the other item, the exact quantity will be ordered according the need of the BOM.

The procurement policy will be defined regarding the forecast consumption profile.

Table 4. Consumption Profiles

Consumption profile		Criteria
1) Obsolete		Obsolete equipment items are those that are no longer used because their technology is out of date....
2) Dying		Dying equipment items have not been used for several months....
3) New		New equipment items are those which have started being used lately or will be soon. Past records cannot be used for stock management purposes.
4) Sporadic		Lumpy equipment items are those with a low rotation but whose average consumption is high
5) Erratic		Erratic equipment items are those with a high rotation rate and high standard deviation
6) Slow		Slow moving items are those with a low rotation and a low average consumption; those complement lumpy items
7) Fast		Fast moving items are those with a high rotation and a low standard deviation; they complement erratic items

After the definition of the consumption profile for every part number, the procurement policy is applied:

Table 5. Procurement Policy for Supply Chain

Price	New	Sporadic	Erractic	Slow	Fast
< 500 €	BOM quantity	Safety Stock + BOM quantity	Min/Max	Safety Stock + BOM quantity	Min/Max
> 500 €	BOM quantity	Safety Stock + BOM quantity	Safety Stock + BOM quantity	Safety Stock + BOM quantity	Safety Stock + BOM quantity

5.2.4.4 Master Data for MRP

The Master Data Item is set up in the ERP (see [R3] – PMP: 4.2.6 – Project Management Tools Landscape). The ones which have to be set up are:

- Order, Production and Reception lead time;
- Procurement policy;
- Safety stock or Min/Max quantity; and
- MOQ (Minimum Order Quantity).

[redacted] s47G, s33(a)

s47G, S33(a)(iii)

[redacted]

[redacted]

5.2.5 Understanding and Engaging Australian Industry

DCNS has been able to map the existing submarine capabilities in Australia through inputs from industry associations and government agencies, open source databases and directories.

To assess these capabilities and, in a two-way approach, to enable Australian industry to establish contact with DCNS, Industry Briefings have been held as follows:

- Adelaide (25-05-2015);
- Melbourne (02-07-2015);
- Sydney (10-07-2015);
- Darwin (29-07-2015);
- Brisbane (30-07-2015);
- Perth/Henderson (05-08-2015); and
- Sydney (Pacific 2015) (7-10-2015).

Through these briefings to over 300 companies, DCNS has presented its involvement in the CEP, its approach to managing the Supply Chain and how potential suppliers could join the

DCNS Global Supply Chain, not only for the SEA1000 program but also for other shipbuilding programs in Australia or around the world involving DCNS.

During the Industry Briefings, DCNS has conducted one-on-one meetings to give them the opportunity to present their capabilities. In conjunction with these meetings site visits have been organised to inspect suppliers' facilities.

In this process of engagement towards Australian industry, DCNS gave suppliers the opportunity to complete a Supplier Pre-Qualification Questionnaire (SPQQ)[4]. This questionnaire captures information on the companies such as skills, experience, tools, processes, performances, financial situation, etc. To date, 103 companies have completed the questionnaire providing a broad understanding of local capability which, when coupled with the existing ASC supply chain of over 2,600 companies, provides a sound basis for the NSP. s47G, s33(a)

s47G, s33(a)

s47G, s33(a)(iii)

[4] http://dcnsgroup.com.au/supplier-pre-qualification-questionnaire/

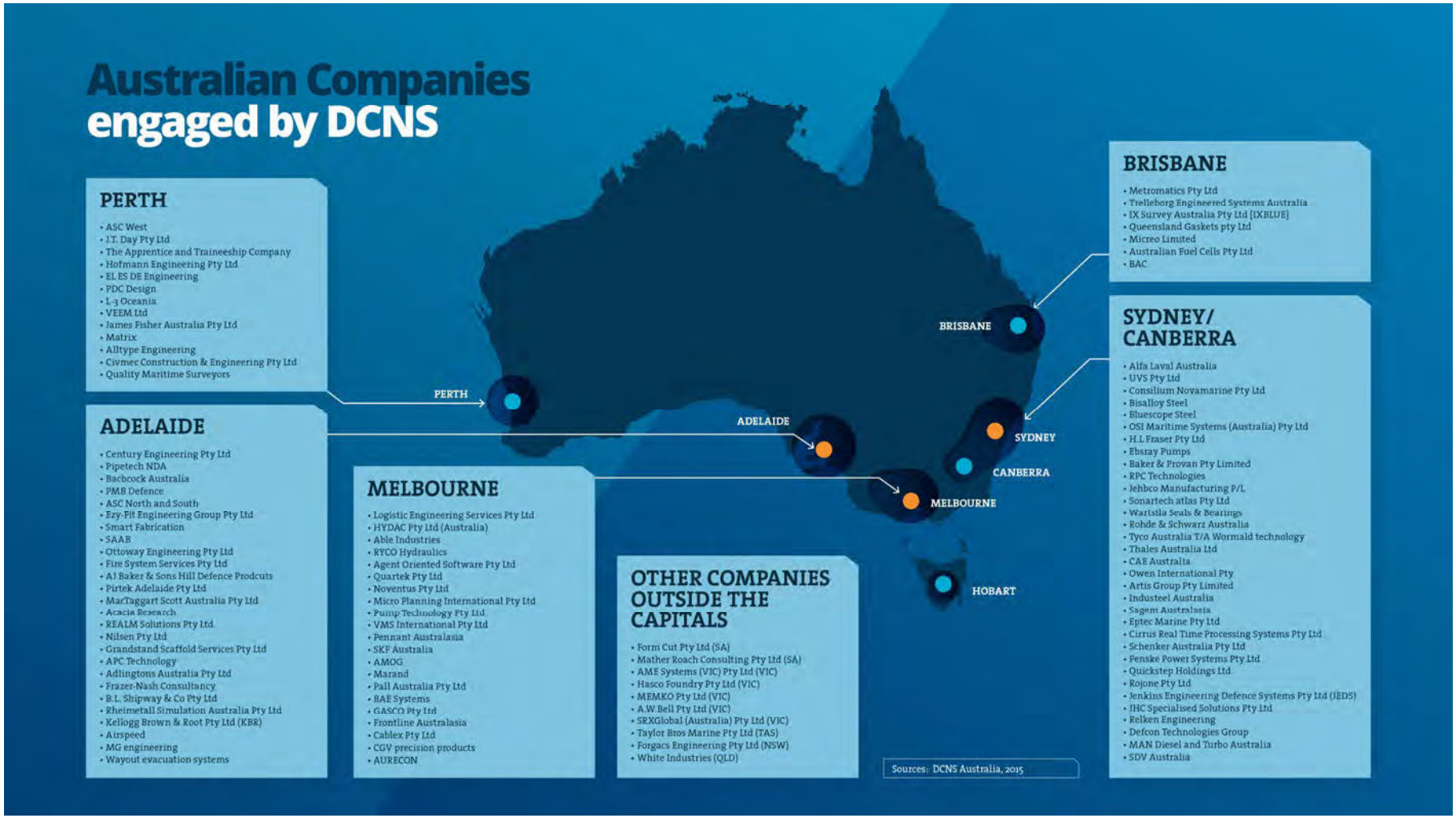


Figure 12. Australian Companies engaged by DCNS

s47G, s47G, s33(a)

Submarine Applications (referring the PBS) Technology Fields	Declared Australian Supplier	Evaluated Australian Potential Contributors
Air & Surface Detection	Sagem Australasia s 47G and s 33 Thales Australia s 47G and s	Daronmont Technologies s 47G and s Raytheon Australia s 47G and s 33 Sonartech Atlas s 47G and s 33 Motion Technologies s 47G and s 33 Owen International s 47G and Cea Technologies s 47G and s 33 Stealth Surveillance System s 47G and s
Mast	s 47G and s 33(a)(iii)	Motion Technologies (5EP)
Sonar Detection		s 47G and s 33(a)(iii) Sypaq Systems s 47G and s Saab Australia s 47G and s 33 Ultra Electronics Avalon Systems s 47G and s Uvs s 47G and s
Combat Management System		s 47G and s 33(a)(iii) Owen International s 47G and Milspec Manufacturing s 47G and s Cirrus Real Time Processing Systems s 47G and Militarytech s 47G and s 33(a)(iii)
Weapon Handling & Control	Babcock Australia s 47G and	Allied Technology International s 47G and s 33(a)(iii) Nepean Engineering s 47G and s 33 Jered s 47G and s 33 Nova Systems s 47G and
Communications	s 47G and s 33(a)(iii)	Thales Australia s 47G and s Ultra Electronics Avalon Systems s 47G and s Rojone s 47G and Novamarine Instruments s 47G and s Jenkins Engineering Defence Systems s 47G and s Indra Australia s 47G and s Boeing Defence Australia s 47G and s 33(a)(iii) Amphenol Australia s 47G and s 33 Bellinger Instruments s 47G and Vicom Australia s 47G and Afc Group s 47G and s Diamond Optics s 47G and s 33(a)(iii) Exelis C4i s 47G and s Huber+Suhner Australia s 47G and s Aero & Military Products s 47G and s
Navigation		s 47G and s 33(a)(iii) Sagem Australasia s 47G and Veem s 47G and s 33(a)(iii) Raytheon Australia s 47G and s Allied Data Systems s 47G and s 33(a)(iii)

Submarine Applications Technology Fields	Declared Australian Supplier	Evaluated Australian Potential Contributors
Pressure Hull	Asc s 47G and	
Non-Strength External Structures	s 47G and s 33(a)(iii)	Able Industries Engineering s 47G and s 33(a)(iii) Adelaide Profile Services s 47G and s 33(a)(iii) Baker & Provan s 47G and s 33 Barden Fabrications s 47G and s 33 Brister & Co s 47G and s 33 Calm Aluminium s 47G and s 33(a)(iii) Hofmann Engineering s 47G and Plasteel s 47G and Bluescope s 47G and

Submarine Applications Technology Fields	Declared Australian Supplier	Evaluated Australian Potential Contributors
Miscellaneous Coatings & Insulations	s 47G and s 33(a)(iii)	Defence Coating Systems, Akzonobel, Arkote, Eptec, Electromold Australia, Australian Inhibitor, A S Harrison & Co, Sec Plating
Energy Propulsion	Pmb Defence, Socomec Australia, Schneider Australia, Man Australia	Metromatics, Austindo, Century, Wärtsilä Jovyatlas Euroatlas, Wayout Evacuation Systems
Steering Gear	Rpc Technologies	Airspeed
Manœuvre	Mc Taggart Scott Australia, Cortland Jeyco	Isca
HP Hydraulic Fluid Distribution	H.I. Fraser	B.L. Shipway & Co, Delta Hydraulics, Hydraulic Distributors, Ryco Hydraulics, Bosch Rexroth, Parker Hannifin, Hydac
Lightening	Compair Australasia	H.I. Fraser, Hydraulic Distributors, Draeger Safety Pacific, Stace, Smart Fabrication, Bosch Rexroth, Parker Hannifin s 47G and s 33(a)(iii)
Radiological Control	s 47G and s 33(a)(iii)	Owen International, Bruck Textiles
Safeguarding and Survival at Sea		Allied Technology International, Jfd, Divex Asia Pacific, Rfd, Bruck Textiles, Indepth Project Management,
Flooding and Leakage Control		Tr Vms
Fire Detection/Suppression	Fire Protection Technologies	Morgan Advanced Materials, Wormald Fire Systems
Air Conditioning & Ventilation	Howden Australia, Hill Defence Products, Fluid Dynamics, Alfa Laval Australia	s 47G and s 33(a)(iii), J&H Williams Holdings s 47G and s 33(a)(iii), Cgb Precision Products, Intertek Adelaide Inspection Services, Pall Corporation, Noske Kaeser Nz
Cooling		Ebsray Pumps, Alfa Laval Australia, Pump Technology, Hydac s 47G and s 33(a)(iii)
Potable Water	Pall Corporatiion Australia, Sea Recovery	Ami Marine Sales, Parker Hannifin

Submarine Applications Technology Fields	Declared Australian Supplier	Evaluated Australian Potential Contributors
s 47G and s 33(a)(iii)	s 47G and s 33(a)(iii)	
Waste Processing		s 47G and s 33(a)(iii) Environmental Fluid Systems
Elastic Mounts		s 47G and s 33(a)(iii) Trelleborg Engineered Systems Australia
Studies, Naval Architecture, System Engineering, Transverse Engineering	Amog	Austest Laboratories, Austindo, Codarra Advanced Systems, Cognesis Contractors, Jhc Specialised Solutions, Qinetiq Australia Gibbs & Cox Australia, Amd Marine Consulting Amt Cadgile
Steel Plates/Profiles	s 47G and s 33(a)(iii)	A.W. Bell Bisalloy Steels, Cmc Australia, Onesteel Arrium Steel, Atlas Steel Austral Wright Metals
Piping s 47G and s 33(a)(iii)		Adlingtons Australia
On Line Fluid Equipment (valves, manifolds, gaskets, etc.)	Isca	Frontline Australasia Moog Australia, Ruag Australia, Stace Smart Fabrication, Bosch Rexroth
Casts, Forgings	s 47G and s 33(a)(iii)	A.W. Bell, Castech, Ferrous Forgings, Townley, Adarsh Intercast & Forge, Overall Forge, Trigg Bros., Pcc Forged Products, Cgc Kymon
Electrical cables & Accessories		Amphenol Australia, Cablex, Interconnect Systems, Tyco Electronics
Composite s 47G and s 33(a)(iii)		Bac Technologies, Axiom Diemould, Baron Rubber Csd Australasia Dc Rowe, Mackay Consolitated, Morgan Advanced Materials, Quickstep, Aerospace Materials
Logistics Through-Life Services		Bae Systems Australia, Bellinger Instruments, Logistics, Memko, Mincham Aviation, Northrop Grumman Integrated Services, Unitronix, Novamarine Instruments, Phoenix Australasia, Schenker Australia, Dms Maritime - Engineering Services s 47G and s 33(a)(iii), Laserbond Limited Thomas Electronics Of Australia
In-Network Equipment		Apc Technology, Metromatics, Mfb, Bellinger Instruments
Training		Bmt Design & Technnology Invenio s 47G and s 33(a)(iii) Amw Professional Services

5.4 Labour, Materials and other Cost Categories from Australian Industry

From the preliminary engagement with Australian industry described at § 5.2.5 and beyond, it is apparent that Australian industry possesses many of the skills likely to be needed to support all three Build scenarios for the FSM. From heavy engineering developed to support the resources sector through to highly capable metal foundries and sophisticated composites companies, the success in the export market demonstrates that many of the necessary skills are already resident in Australian industry.

Where important skills are not yet at the required level, DCNS will support suitable companies through ToT and mentoring in order to attain supplier status.

DCNS assesses that the following cost categories, as a preliminary list that reflects its current understanding of the Australian marketplace, can be sourced from Australian industry for the FSM.

s47G, s33(a)

[redacted]

5.5 Working in Partnership with an Australian Build and Sustainment Organisation

DCNS proposes a contractual program delivery model for Australian build activities that includes a partnership with ASC Pty Ltd. In the course of build activities, DCNS also proposes to transfer technology for sustainment activities to the CoA's nominated ASO.

For build activities, DCNS has drawn on the Australian supply chain presently supporting the Collins class submarine. To assure itself of the validity of this approach, DCNS has been working in partnership with ASC in the course of the CEP. DCNS assess ASC to have common processes and supply chain management systems though overall maturity and capability is still developing. DCNS proposes to focus on strategic risk management and supplier relationship management as priority areas for improvement in the next stage of the FSP. DCNS will also benefit from learning more about the specific risks of doing business in the Australian marketplace and other constraints faced by ASC.

ASC data indicates that around 92% of the Collins class supply chain is now sourced from Australia and this provides a basis for development of the Future Submarine supply chain. Following the recommendations of the study into the business of sustaining Australia's strategic Collins Class Submarine Capability (Coles Review) [A1], ASC has made a number of changes in its operations to improve the availability of the Collins class submarines. In 2012, ASC was given control of the management of the supply chain under a Performance Based Contract.

This has led to improvements over the past three years:

- The number of on-time purchase orders has improved;
- The suppliers delivery performance has improved, even though performances are better for purchased rather than for repaired items;
- ASC's supply chain department includes a Strategic Sourcing function (as well as a Supply Support and a Warehouse and Scheduling department); and
- The inventory is more efficiently managed.

DCNS and ASC use common processes such procurement-related activities (suppliers' qualification processes, suppliers' relationship management…) and standard gates processes (RFI, Audits, RFQs, qualification on first item). Even though sometimes organised differently to DCNS, the buying activities are consistent with the ISO 9001 norm for which ASC holds a certification and the key features are mastered. ASC Enterprise Resource Planning (ERP) system enables the leading and monitoring of all Supply Chain activities however though there is no automatic link with the Product Lifecycle Management.

DCNS was able to assess ASC qualification process for a new item through the example of parts of the CCSM diesel engines being remanufactured in Australia independently from the OEM. This included the visit of some of the suppliers involved in the process, namely Castech and A.W. Bell for the production of castings, Intertek for the laboratory testing and Nylastex for precision manufacturing.

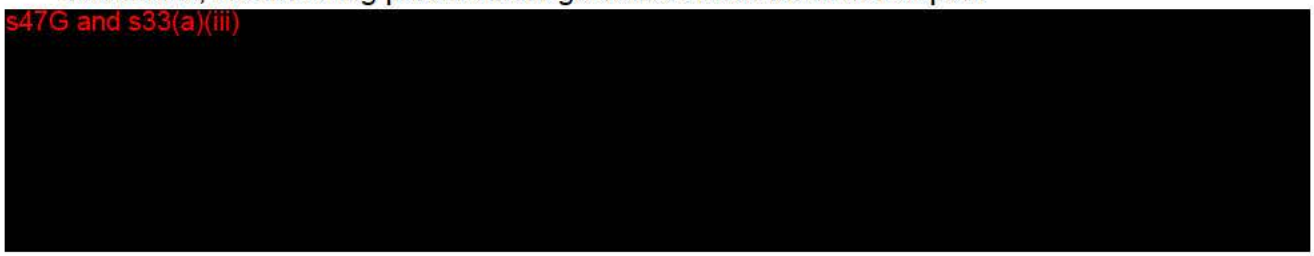
They are assessed using mostly objective Key Performance Indicators (KPIs) of Cost, Quality, Schedule, and Technical, but also against relationship-type ones (e.g. responsiveness to queries) for major subcontractors. An element of differentiation with DCNS is the fact that most of ASC subcontractors are diversified and not specialised in the naval field, which allows on the one hand avoiding economic dependencies issues but on the other hand makes it more difficult to empower the subcontractor in his activity.

As a result of this analysis of ASC procurement–related activities, DCNS has acknowledged the level of capability of the existing CCSM Supply Chain and therefore been able to use ASC Suppliers list to facilitate sourcing activities. In the NSP, this will allow accelerating the Gate Process above described to qualify new DCNS suppliers or to qualify existing suppliers for other types of relevant activities.

5.6 Build Scenario Procurement Guidelines and Variations

The overarching focus of the procurement will be maximisation of Australian Industry Involvement. Taking into account the complexity of the supplies to deliver a capable submarine, the following procurement guidelines have been developed:

s47G and s33(a)(iii)



The supply chain formed for Critical and Main equipment will ship to the selected integration facility associated with the build option. This method creates the optimum solution between maximisation of Australian industry involvement, and cost and risk to the build program.

- As an assumption for the Rough Order of Magnitude (ROM) Offer process, 50% of the Secondary equipment will be purchased from the Australian Market; and
- 100% of the Standard Equipment and services will be supplied where the shipyard activities occur, building on the existing CCSM supply chain.

s47G, s33(a)

s47G, s33(a)(iii)

These considerations will be affected by the availability status of the supplies:

- The supply is available;
  - The necessary supply for the build or the sustainment of the FSM is already available in Australia.
- The supplier can develop the adequate supply:
  - The selected supplier will be able to provide the necessary supply following specifications from the designer. It will not be a catalogue based procurement order and, while this approach generates an upward impact on cost, it is also an opportunity to generate added value that becomes recognised in the company's skillset.

- A capability needs to be developed in Australia to provide the supply, or the supply has to be procured from overseas:
  - The necessary supply is presently unavailable in Australia. Depending on the necessity to set up locally the relevant industrial capacity for sovereignty purposes, or for the benefit of Australian Industry Involvement, a number of ToT mechanisms identified in § 3.1 will be used.

Circumstances involving safety or programmatic issues: some adaptations can require skills or technologies not yet possessed by Australian companies. This could be a major issue in relation to safety imperatives or the cost/schedule implications for the program. In such cases, decisions to modify or adapt existing supply sources in favour of local outcomes will need to be addressed during the design phase, very early in the project schedule. Working collaboratively within the design team, involving industry stakeholders, architects, procurement experts and the end users will be important.

5.7 DCNS Global Supply Chain

One of the DCNS plans to maximise Australian Industry Involvement involves access by Australian suppliers to the DCNS Global Supply Chain (GSC).

DCNS will integrate activities performed in the context of the FSP to its Corporate Procurement Strategy. That includes:

- The study and analysis of the Australian market;
- The identification of qualified and skilled suppliers; and
- The technology roadmaps of the proposed Centres of Excellence or shared in a bilateral agreement.

DCNS is also conducting many programs around the world, including in Brazil, Malaysia and India. Each of them involves building and maintaining supply chains. Newly qualified Australian suppliers within the DCNS Global Supply Chain will be considered for these programs and evaluated according to cost, quality and performance. Success in these endeavours will not only be good for the companies in question: it will ensure the long-term viability of the Australian supply chain.

DCNS has experience in this form of program with for example India building submarine hatches for both Brazil and itself.

DCNS will also be joining Defence's GSC Program that has proven successful for Australian companies. s47G and s33(a)(iii) [redacted]

[redacted] s47G, s33(a) [redacted]

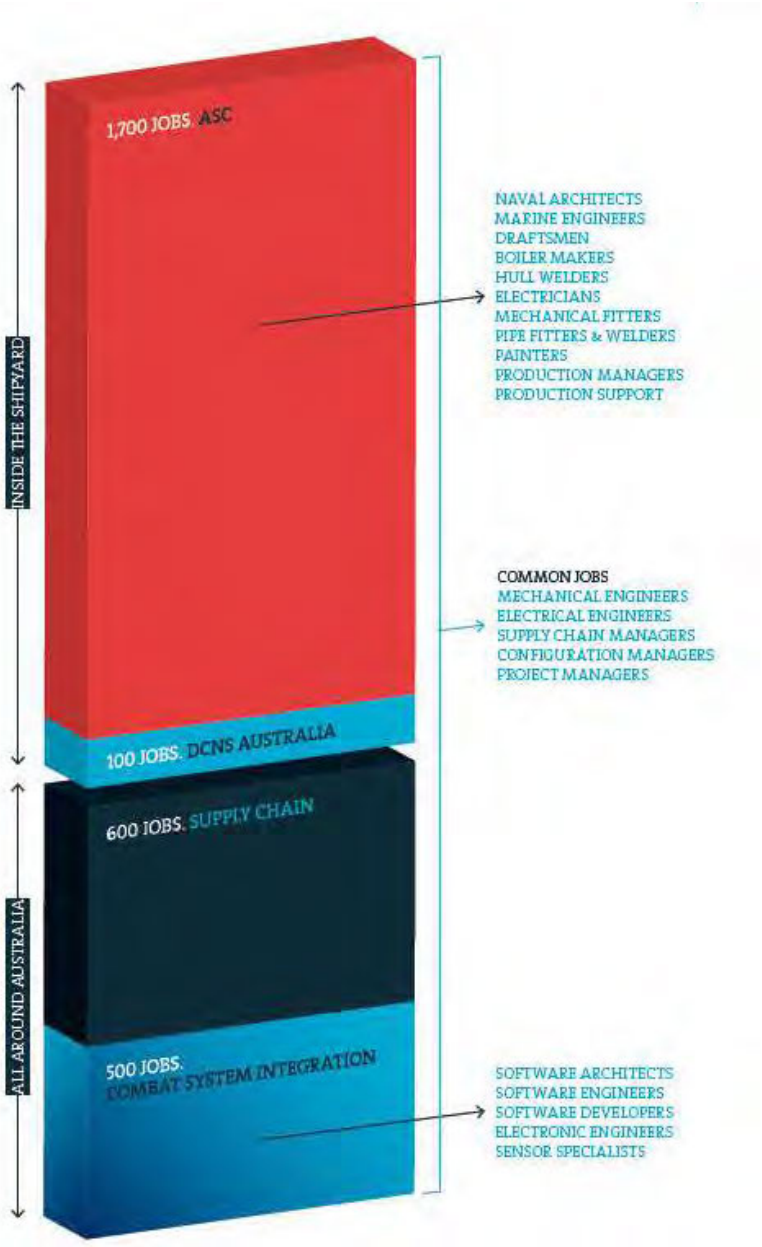


Figure 13. Anticipated Employment Outcomes from the FSP

s47G, s33(a)

s47G, s33(a)(iii)

s47G, s33(a)(iii)

s47G, s33(a)

s47G and s33(a)(iii)

s47G, s33(a)(iii)

s47G and s33(a)(iii)

s47G and s33(a)(iii)

B Australian Industry Management, Monitoring and Reporting s47G, s33(a) – FOUO)

B.1.1 Management

AIP progress will be summarised through its reporting activity, and corresponding progress reviews. DCNS proposes this reporting to be performed via a dedicated CoA/DCNS progress group.

s47G, s33(a)(iii)

s47G, s33(a) will perform the following tasks:

s47G, s33(a)(iii)

s47G and s33(a)(iii)

B.1.2 SEA1000 Project Manager

s47G, s33(a)

B.1.3 DCNS AIP Representative

The AIP Representative ensures:

- Regular contact with the CoA on all subjects relative to the AIP;
- Follow-up of the actions agreed between the CoA and DCNS;
- Follow-up of the ToT from DCNS to the CoA; and
- Follow-up of the ToT from DCNS to the Australian Shipyard.

s47G, s33(a)

s47G, s33(a)

s47G, s33(a)

s47G, s33(a)

s47G, s33(a)

s47G, s33(a)

s47G, s33(a)

s47G and s33(a)(iii)

s47G, s33(a)

s47G, s33(a)

s47G and s33(a)(iii)

s47G,

s47G and s33(a)(iii)

.

s47G, s33(a)

s47G, s33(a)

s 47G and s 33(a)(iii)

Batteries	s 47G and s 33(a)(iii)	PMB Defence	s 47G and s 33(a)(iii)
Propeller shaft, coamings, stem gland coaming, submerged bearing, ...		Hofmann Engineering	
Rudder (composite)		RPC Technologies	
Bilge and Ballast Pumps		H.I. Fraser	
Sea water valves		H.I. Fraser	
Propulsion motor		s 47G and s 33(a)(iii)	
Steering console			
Attack periscope / search optronic		Sagem Australia	
Navigation system		OSI Maritime	
Exhaust hull valves		H.I. Fraser	
HP air cylinders		H.I. Fraser	
IPMS		s 47G and s 33(a)(iii)	
Masts		MacTaggart Scott Australia	
Sonar suite		Thales Australia	
Fans		Howden Australia	
External communica ion system		Thales Australia	
Kinematic and bow shutters		s 47G and s 33(a)(iii)	
Thrust block		Wartsila	
Freight		DB Schenker	
Generators		s 47G and s 33(a)(iii)	
Flank Array Fairings		RPC Technologies	
Cool/cold provisions stores		Hill Defence	
s 47G and s 33(a)(iii)		s 47G and s 33(a)(iii)	
Galley		Hill Defence	
Weapon handling system		Babcock Australia	
s 47G and s 33(a)(iii)		s 47G and s 33(a)(iii)	
Hull moun ing (Resistant & Non Resistant Structures) and section		ASC	
On board outfitting (mechanical, piping, electricity, insulation...)		ASC	
Pressure Hull rolling and fabrication		Hofmann Engineering	
Resistant structures fabrication		CIVMEC	
Mounting of composite equipment		ASC	
Raft or subsection outfitting		Adlingtons	
Weapon embarkation equipment		Babcock Australia	
Sonar dome, acoustic windows		RPC Technologies	
CO_2 absorber mechanical (soda lime)		JFD Global	
HP air compressors		Garden Denver/Sauer	
Secondary switchboard cabinets		Schneider Australia	
Fire detection system		Fire Protection	
Hatches		Broens	
Heat exchangers		Fluid Dynamics	
Hydraulic accumulators		H.I. Fraser	
Propulsor		ASC	
Weapon launching tubes		Babcock Australia	
Catalytic burner		s 47G and s 33(a)(iii)	
CO / CO_2 analyser			
s 47G and s 33(a)(iii)		Taylor Bros	
Welding filler metal		s47G and	
Accommodation modules			
Air purifiers, masks and breathing air plugs			

s 47G and s 33(a)(iii)
CIVMEC
Airspeed, Quickstep, Matrix, Marand
PumpTechnologies, Ebsray Pumps
Veem
s 47G and s 33(a)(iii)
Veem
s 47G and s 33(a)(iii)
Sage Automation, Saab
s 47G and s 33(a)(iii)
Taylor Bros
s 47G and s 33(a)(iii)
Civmec, BAE, s 47G and s 33
s 47G and s 33(a)(iii)
CIVMEC
Hofmann Engineering
Matrix s 47G and s 33(a)(iii)
s 47G and s 33(a)(iii)
Airspeed, Quickstep, Matrix, Marand, BAC
s 47G and s 33(a)(iii)
Penske
Thomas Global
Wormald, Tyco, Chubb
s 47G and s 33(a)(iii)
Alfa Laval Australia
s 47G and s 33(a)(iii)

s47G, s33(a)(iii)

s47G, s33(a)

s47G, s33(a)

s47G, s33(a)(iii)

s47G, s33(a)(iii)

E Abbreviations/Acronyms/Glossary s47G, s33(a) – FOUO)

A

AIC	Australian Industry Capability
AII	Austrian Industry Involvement
AIP	Australian Industry Plan
AIPPG	AIP Progress Group
AIPPM	AIP Progress Meeting
AIPPR	AIP Progress Report
ASO	Australian Sustainment Organisation

B

BAFO	Best And Final Offer
BNS	Boustead Naval Shipyard
BS	Build Strategy

C

CCSM	Collins Class Submarines
CEP	Competitive Evaluation Process
CESM	Communication Electronic Support Measures
CoA	Commonwealth of Australia
CoE	Centre of Excellence
CP	Candidate Project
CSI	Combat System Integrator

D

DID	Data Item Description
DSTO	Defence Science and Technology Organisation

F

FAT	Factory Acceptance Trial
FCD	Full Cycle Docking
FGD	Foreground
FOUO	For Official Use Only
FSM	Future Submarine
FSP	Future Submarine Program

I

IP	Intellectual Property
IPMS	Integrated Platform Management System

N

NDA	Non-Disclosure Agreement
NSP	Next Stage of the Program

O

OEM	Original Equipment Manufacturer
OJT	On the Job Training

P

PBS	Product Breakdown Structure
PDP	Procurement Decision Proposal
PMP	Program Management Plan
PSI	Platform System Integrator

R

R&D	Research and Development
RACI	Responsible/ Accountable/ consulted/ Informed
RAN	Royal Australian Navy
RESM	Radar Electronic Support Measure
RFI	Request For Information
RFP	Request For Proposal
RFQ	Request For Quotation
ROM	Rough Order of Magnitude

S

SA	South Australia
SME	Small-Medium Enterprise
SPQQ	Supplier Pre-Qualification Questionnaire

T

TLS	Through-Life Services
ToT	Transfer of Technology