

SADILP 2019: CONCEPT PAPER

- HOW DOES SEA1000 AND SEA5000 LEARN FROM EACH OTHER?
WHAT LEADERSHIP IS REQUIRED AND FROM WHOM?

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What are the SEA1000 and SEA5000 projects?

SEA1000 is the Capability Acquisition & Sustainment Group (CASG) project delivering the new \$50 billion (AUD) Attack Class submarines for the Royal Australian Navy (RAN). The project has been awarded to NAVAL Group who will use their successful Short fin 'Barracuda' nuclear –powered design as a basis for the new submarines for the RAN.¹

The RAN has ordered 12 vessels and these will be built by NAVAL Group at a specialist submarine shipyard at Osborne in South Australia. These new shipyards will complement the facilities already resident at Osborne built as part of the Collin's submarine program and will share some facilities with the new SEA5000 project delivering the Hunter Class frigates. The Commonwealth Government's Australian Naval Infrastructure (ANI) program will support the development of the future submarine shipyards.

Lockheed Martin have been contracted to provide the Combat control System, which provides an open-architecture submarine combat control system for analysing and tracking submarine and surface-ship contacts, providing situational awareness as well as the capability to target and employ torpedoes and missiles².

SEA5000 is the project delivering Nine Hunter Class frigates for the RAN, with BAE Systems awarded the contract to design and build the vessels at the Osborne Naval Shipyard precinct in South Australia³.

The Hunter program is the largest surface ship project in the nation's defence history. It will create and sustain more than 5,000 jobs across BAE Systems and the wider Australian defence supply chain over the life of the program⁴.

SEA1000



Design Origin: France

Build Design: Custom Design

Vessel Type: Submarine

Defence Prime: Naval Group

Manufacturing site: Osborne, SA

Combat Systems: Lockheed Martin

Delivery Model: 12 submarines

Schedule: First delivery 2030

Budget: \$50 Billion AUD

SEA 5000



Design Origin: UK

Build Design: Based upon Type 26

Vessel Type: Surface Ship

Defence Prime: BAE Systems – ASC Shipbuilding

Manufacturing Site: Osborne, SA

Combat Systems: Saab and Lockheed Martin

Delivery Model: nine Frigates

Schedule: First delivery 2025

Budget: \$30 Billion AUD

¹ ASC – Future Submarine Project (<https://www.asc.com.au/submarines/future-submarine-project/>)

² Future Submarine Program – Lockheed Martin (<https://www.lockheedmartin.com/en-au/products/future-submarine-program.html>)

³ Future Frigate – CASG

(<https://www.defence.gov.au/CASG/EquippingDefence/SEA%205000%20Phase%201.asp>)

⁴ Hunter Class Frigate – BAE Systems (<https://www.baesystems.com/en-us/feature/hunter>)

Before we look at How, let's look at WHY!

In order to determine how these projects (SEA1000 and SEA5000) should learn from each other, it was important to look at why these projects should share lessons learned.

The primary reasons these programs should learn from each other are:

- **Strategic Intent:** If the nation's strategic intent of a sovereign ship building capability is to be achieved, the programs will have to learn from each other. Such learning will increase the recurrence of positive aspects and reduce the recurrence of negative aspects.
- **Reduction of Risk:** Although separate programs they can impact each other based on their similarities, which are detailed later in this paper – if they can learn from each other, then the risk of each program can be reduced.
- **Business benefits:** There are benefits that can be made from a political perspective, a military perspective, taxpayer's perspective and an Australian industry perspective.

The Naval Shipbuilding Plan is a transformational opportunity for our nation; everything should be done to make sure it is carried out to the highest standard possible.

From the WHY to the How!

There are already standard processes and tools that can be utilised for the two programs to learn from each other. We identified what these were and will detail how these should be utilised within the recommendations of this paper. Such processes and tools are:

- **Continuous Improvement:** the only way organisations' improve is if they learn, innovate and update the way they do business. Many organisations' now have dedicated continuous improvement departments.
- **Contractual Requirements:** clauses can be placed into contracts – point to note here is that all contracts that we have had access to have only stipulated requirements for internal continuous improvements. If clauses can be placed requiring the two programs to learn from each other then we have a contractual incentive for the programs to learn from each other.
- **Joint Procedures:** these are another form of documentation which can standardise the agreements and methods of work in which such learnings can be carried out.
- **Learning from previous programs:** there have been multiple programs in the recent past that both programs can improve from their experience. The initial build of the Collins Class fleet in the early 1990's is still relevant and the lessons learnt from that program would still reside within ASC Pty Ltd. The recent build of the Air Warfare Destroyers is another example where there were many issues at the early stages of the program but due to great resilience, the program was able to be 'turned around'. These two programs could avoid these early stage issues if such lessons could be carried over.

- **Culture:** Organisations within the naval shipbuilding industry have a good culture for implementing lessons learnt and continuous improvement. What is needed and what we understand to be in the process of being setup is a culture of national interest rather than just specific program interest.

So what are the key similarities and differences between SEA1000 and SEA5000?

In order to evaluate the similarities and in-turn, the differences between these two projects, it was important to begin with the projects timelines:

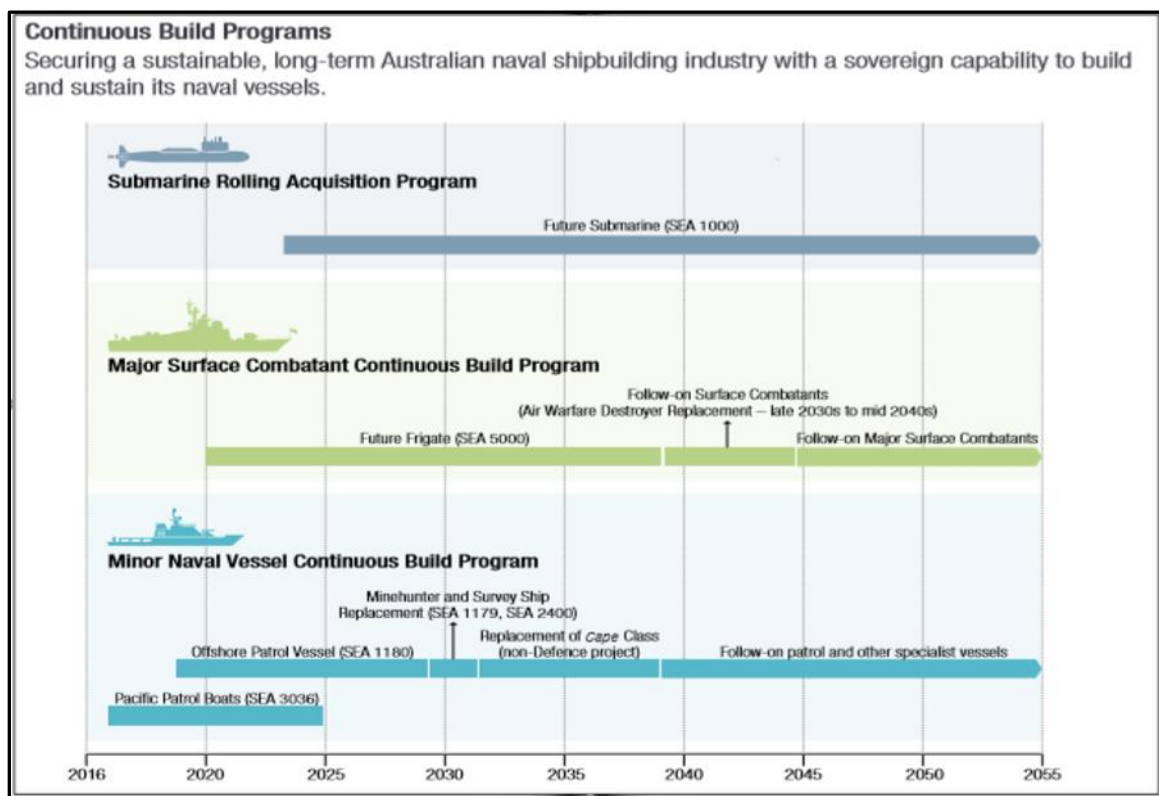


Table 1⁵

⁵ Naval Shipbuilding Plan – 2017 (ISBN: 978-0-9946046-7-5)
(<https://www.defence.gov.au/NavalShipbuilding/Docs/NavalShipbuildingPlan.pdf>)

As identified within Table 1 above, it is apparent that both SEA1000 and SEA5000 are required to deliver key capabilities over a similar time period in the late 2020's extending into the late 2030's. This construction overlap has the potential to drain the resources available within South Australia and more broadly within Australia and its region. In order to conduct a more detailed evaluation, a review of each project was performed to determine other potential impact points:

	<p>SEA1000</p> <ul style="list-style-type: none"> • Build Location - Osborne SA • Build Period 2025-2040 • Supply Chain - To Be Determined • Workforce - To Be Determined
	<p>SEA5000</p> <ul style="list-style-type: none"> • Build Location - Osborne SA • Build Period 2022-2030 • Supply Chain - 60% local suppliers (generating an indigenous supply chain) • Workforce - ASC Shipbuilding

Key Similarities

A brief analysis shows that the key areas of interest across these two projects are broadly:

- **Build Location** – similar periods and same build location. Result: potential impacts to the build cycle for each capability;
- **Build Period** – as above, similar build periods and the sharing of infrastructure. Result: potential impacts to the construction schedule;
- **Supply Chain** – supply chain pressure due to similar build times and locations. Result: could result in an impact to delivery; and
- **Workforce** – both projects will be utilising finite (and specialized) workforce resources at similar periods. Result: potential impacts to delivery for both projects should competition exist.

To narrow our research further, the two key similarities of Supply Chain and Workforce were identified as being key areas of concern that, if not managed correctly, could seriously jeopardise the success of these two projects.

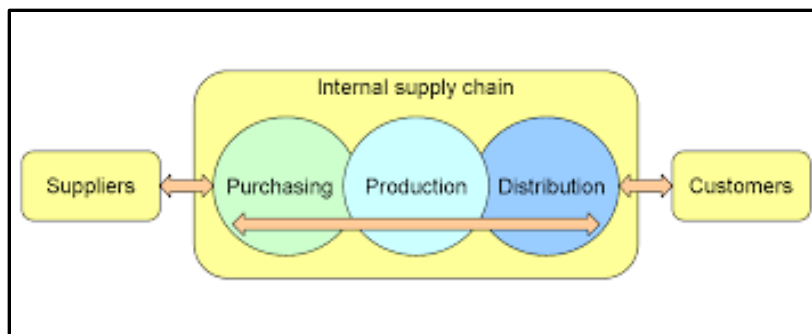
Supply Chain

The supply chain development for both programs are in their infancy stages. While SEA5000 has only recently developed supply chain agreements, SEA1000 is yet to finalise their supply chain strategy. Overarching both projects is the requirements surrounding local industry involvement as part of the Federal Governments priority in developing a sovereign shipbuilding industry within Australia⁶.

The key Supply Chain aspects requiring careful management across each project were identified as:

1. **Information Sharing:** Sharing information between SEA5000 and SEA1000 such that the supply chains already developed for SEA5000 can be utilised (where possible) to fulfil the supply requirements for SEA1000. While collaboration between these projects is already underway⁷, further developments in supplier management must be shared between these projects to ensure successful delivery of each capability.
2. **Delivery Schedules:** Ensuring that delivery requirements for both projects do not exceed the product output ability of local suppliers to support. A smooth output from the supply chain will:
 - increase the likelihood of quality products being supplied to each project;
 - allow the organisations to appropriately setup and maintain a competent workforce;
 - remove the usual 'boom and bust' cycle that commonly occurs with Defence projects.

The important point to highlight is the overarching strategic intent to create a 'national shipbuilding enterprise' and any undue pressure placed upon the local supply chain network could result in this work being diverted to larger (and vastly more experienced) overseas entities.



⁶ Naval Shipbuilding Plan – 2017 (ISBN: 978-0-9946046-7-5)

(<https://www.defence.gov.au/NavalShipbuilding/Docs/NavalShipbuildingPlan.pdf>)

⁷ Teleconference 7Nov19; Mr R Geisler & Mr J Cutthill (ASC Shipbuilding)

Workforce

Similar to the development within the supply chain, both projects are still developing their strategic workforce plans. However, successful delivery of both projects hinges upon the ability of South Australia, and more broadly Australia, to provide a workforce with the necessary skillsets to deliver on these projects. As highlighted above, similar construction schedules across both projects could increase the risk of a ‘drain’ on specific trades at particular times, which may impede the process of each project at critical stages. Close collaboration between these projects will ensure:

1. Specific ‘white collar’ workforce requirements during the preliminary phases are adequately managed (e.g. engineers, project managers, and schedulers).
2. Sufficient ‘blue collar’ work groups are available to provide a smooth transition between projects;
3. Specific workforce requirements (or niche trades) are managed across both projects to prevent delays;

The Naval Shipbuilding College (NSC) has been developed by the Australian Government to:

- establish industry workforce requirements,
- build capacity within the local industry to support the Naval Shipbuilding Plan, and
- increase annual attendance at education and training facilities around Australia⁸.

The NSC is an integral part of the development of a sovereign shipbuilding capability and both projects will require the support of the NSC to ensure workforce requirements are met now and in to the future.

The workforce model implemented for the SEA5000 project has been designed and developed to manage the specific requirements related to SEA5000⁹ and the environment within which these vessels will be built (Osborne, SA). Integral to the workforce development will be the NSC who will provide support to the development and training of the specific workforce requirements for both SEA1000 and SEA5000 and more importantly, the entire shipbuilding industry.



ASC employees in front of the final Air Warfare Destroyer delivered to the Royal Australian Navy

⁸ Naval Shipbuilding College (<https://www.navalshipbuildingcollege.com.au/>)

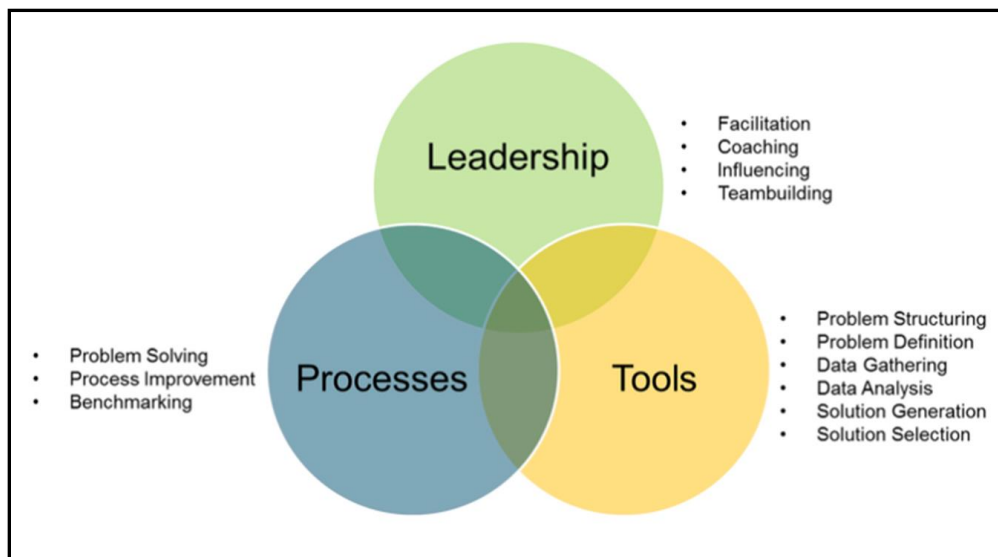
⁹ Teleconference 7Nov19; Mr R Geisler & Mr J Cutthill (ASC Shipbuilding)

Leadership – Continuous Improvement

Leadership is required to ensure both projects develop a culture of Continuous Improvement. The issue surrounding collaboration across these projects is impacted by:

1. These projects need to be managed individually but also collectively in order to meet the strategic intent;
2. The Department of Defence (DoD) generally manages projects in a more administrative manner, however these projects require collective strategic management to ensure success;

Leadership is a sub-element of a broader set of requirements to ensure success of these two projects. The inter-relationship between the key elements of Leadership, Processes and Tools is detailed below:



In order to achieve success in any endeavor, the requirement to balance the three requirements above is paramount. If you focus too heavily on one element, the others begin to falter.

- **If organizations were to focus too heavily upon Process and Tools, but provide inadequate Leadership:** this results in a lack of direction, motivation and commitment (typically, senior managers decide to “train everyone in a method and tools” and assume it is not their job to lead improvement).
- **If the focus is on Process and Leadership, but no Tools (or inadequate tools):** this results in a frustrating lack of progress with improvement (this is a more uncommon scenario since most of the methodologies/processes have tools associated with them).
- **If Leadership and Tools is the priority, but no process:** this results in random activity and a lack of viable improvements (typically, senior managers latch onto the latest tool and expect everyone to use it; ‘cherry-picking’ something from the available ‘toolkit’, but with no process or context within which to apply it).

You need all three elements to achieve success; otherwise, any attempts to achieve sustainable Continuous Improvement will likely fail.

How will these projects learn from each other?

The questions remains how are these two projects going to collaborate sufficiently to ensure lessons learned across both programs can be shared when each have their own priorities and constraints.

The DoD has proven itself a strategic leader on the battlefield; however, its ability to deliver on major defence acquisition has at times been questionable. The First Principles Review¹⁰ in 2015 identified that the former organisational model was ‘complicated, slow and inefficient’ and major change was needed to improve the way in which the DoD managed major acquisition activities. A major change detailed within the FPR was the creation of a ‘strategic centre’ incorporating:

- Capability Managers (CMs) responsible for specific capability requirements;
- Acquisition activities based upon inter-operability requirements;
- The creation of CASG under the guidance and control of one organisation (Vice Chief of the Defence Force).

However, how are we going to have lessons learned shared between the two programs? One option is to create ‘administratively’ developed contracts which could specify that annual workshops be conducted with success measured upon key party’s attendance and minutes and actions developed. This likely will not achieve full collaboration.

However, at the strategic level this could look quite different and might be multi-dimensional whereby each program is incentivised to work together; where an environment exists where they want to shares common goals and objectives to create improvements in the way both projects are delivered.

This could be achieved by CASG taking on a more active role in managing these acquisitions as an overall industry rather than just on a project-by-project basis. In other words, CASG could be (as part of their project management functions) assisting with the identification of areas where these (and other maritime projects) can learn from each other and potentially support each other to ensure success across the program, rather than just each individual programs working for themselves.

Contracts could be written such that collaboration between projects is mandated and that synergies are encouraged to ensure overall success. Contracts could be incentivised such that this collaboration comes with some form of rewards (or potentially financial penalties if they do not collaborate).

Strategic intent needs to be driven into a practical aspect within each of the programs contract; essentially, we need to drive the ‘lessons learnt’ requirement via the only tool we have, which is the contracts within each program.

¹⁰ First Principles Review – Creating One Defence – 2015
(<https://www.defence.gov.au/Publications/Reviews/Firstprinciples/Docs/FirstPrinciplesReviewB.pdf>)

Recommendations

The following recommendations summarise the reviews conducted previously within this concept paper:

1. **Establish Key Principles in order to achieve the Strategic Intent;**
2. **Politicians explain the Strategic Intent, CASG turn this into administrative Rules;**
3. **Need to fill the gap with “Principles”;**
4. **For Example - Strategic Intent – Establish a sovereign ship building industry, deliver defence capability and economic growth (exports etc.):**
 - a. **Principles #1 Design and IP Creation is conducted in Australia Decision;**
 - b. **Principle #2 SEA1000 and SEA5000 must learn from each other and apply lessons learned, continuously improve;**
 - c. **Principle # 3 Workforce for both projects must be complementary not competing;**
 - d. **Principle #4 Local Supply Chain will have preference to these programs over overseas suppliers where practical.**
5. **Commercial**
 - a. **Continuous Improvements = Change;**
 - b. **Change = Contract Changes (? ;)**
 - c. **Contract Changes for lessons learned must be incentivised rather than penalised;**
 - d. **Contract Change Process needs to be streamlined, less than 4 weeks.**
6. **Common Data / Lessons Learned Frameworks.**
7. **Briefing Sessions to Respective Project/Leadership Teams**
8. **Osborne Facilities Management – ANI.**
9. **Measures Lessons Learned not only identified.**

References:

1. ASC – Future Submarine Project (<https://www.asc.com.au/submarines/future-submarine-project/>)
2. Future Submarine Program – Lockheed Martin (<https://www.lockheedmartin.com/en-au/products/future-submarine-program.html>)
3. Future Frigate – CASG (<https://www.defence.gov.au/CASG/EquippingDefence/SEA%205000%20Phase%201.asp>)
4. Hunter Class Frigate – BAE Systems (<https://www.baesystems.com/en-aus/feature/hunter>)
5. Naval Shipbuilding Plan – 2017 (ISBN: 978-0-9946046-7-5) (<https://www.defence.gov.au/NavalShipbuilding/Docs/NavalShipbuildingPlan.pdf>)
6. Naval Shipbuilding College (<https://www.navalshipbuildingcollege.com.au/>)
7. Teleconference 7Nov19: Mr R Geisler & Mr J Cutthill (ASC Shipbuilding)
8. First Principles Review – Creating One Defence – 2015 (<https://www.defence.gov.au/Publications/Reviews/Firstprinciples/Docs/FirstPrinciplesReviewB.pdf>)