Defence FOI 374/22/23 Item 1 Document 1

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## **TASKING STATEMENT**

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# Scope of Task:

The Contractor shall establish and assess the current and future scale of shipbuilding and sustainment programs at Henderson, in order to determine what needs to be done to realise continuous naval shipbuilding. Some of the future shipbuilding programs have been identified in Defence policy documents, and have some level of certainty as to their timing and requirements. Other programs are less certain, and their current details can be provided by Defence to be used in the assessment of future programs as appropriate and/or relevant to the advice. Sustainment information can be made available by request and by agreement from Defence.

The review should assess the complexities of shipbuilding programs, and their impact on sustainment inclusive of programs such as TRANSCAP, NPS (AUKUS), Collins, Hunter and Stalwart.

At a minimum, the advice should reference:

1.1 <u>The impact of multiple ship designs.</u> The review will consider (on Australian industry), the impact of constructing multiple minor naval vessel designs, the shipbuilding and sustainment workforce, and infrastructure, potentially using different materials (e.g. aluminium, different steel requirements), in the quantities *identified* at paragraph 1.2 below. In particular, the scope of minor naval vessels to be constructed at Henderson, Western Australia (WA), is broader than the number of major surface combatants being constructed in Osborne, South Australia. In addition, the Henderson shipyards operate to construct and support commercial interests in addition to naval vessels.

- 1.2 <u>The impact of the range of vessels, numbers and tonnage</u> on Australian industry, the shipbuilding and sustainment workforce and infrastructure. The number of vessels being or planned to be constructed within a class ranges from two to 22 vessels, of varying scale and complexity.
- 1.3 <u>The infrastructure that exists, and the infrastructure that is required</u>, to deliver the shipbuilding programs. The review will consider the extent to which the shipyard at Henderson is enabled to deliver the current shipbuilding and sustainment programs, identify any possible unrealised capacity, opportunities, deficiencies, gaps or challenges to existing infrastructure. In particular, consider the infrastructure to build and sustain large hull support vessels (noting the work currently being progressed jointly by Defence and the WA Government for large hull support vessel infrastructure). The shipyards and industrial sites at Henderson have different facilities, infrastructure and physical capabilities.
- 1.4 <u>The current status of Australian industry</u>, the direct and indirect (e.g. contracted) shipbuilding and sustainment workforce, its ability to scale up to meet the requirements of the shipbuilding and sustainment programs, the current labour market and any challenges that Australian industry and shipbuilding and sustainment workforce may be facing internally and externally, specifically:
  - a. Australian industry and the shipbuilding workforce capability to undertake the shipbuilding programs;
  - b. Australian industry and the shipbuilding workforce supporting the full breadth of shipbuilding programs;
  - c. Any investment made by Defence or industry to enable or deliver the current shipbuilding programs to enable or deliver subsequent anticipated programs; and
  - d. Identifying capability development which is required to successfully deliver the shipbuilding programs.

The review should also consider more broadly:

- 2.1 <u>The impact of interactions and interdependencies</u> (if any) between, the shipbuilding programs on Australian industry, the shipbuilding and sustainment workforce and infrastructure.
- 2.2 <u>The current shipyard arrangements at Henderson</u>, including current tenure and ownership arrangements of the shipyard and impact, if any, this has on the successful delivery of the shipbuilding programs.
- 2.3 <u>The extent to which shipbuilding programs can or do deliver continuous naval shipbuilding</u>, or a sufficiently steady pipeline of shipbuilding activity. The review should also consider any other aspects of continuous naval shipbuilding and/or the naval shipbuilding enterprise that may influence, impact or affect Australian industry and/or the shipbuilding workforce to successfully deliver the shipbuilding programs.

This analysis shall establish the parameters through which Defence can consider the future integrated shipbuilding and sustainment enterprise, and optimise Australia's decisions to deliver uncompromised Navy capability in a deteriorating strategic environment.

In undertaking the review, the Contractor will also specifically consider:

- 3.1 **Demand:** establish the current and future scale of shipbuilding and sustainment programs at Henderson including mapping the potential future for maritime platform demand in WA, what that entails for the sovereign enterprise, and the implications for the acquisition of those platforms. The Contractor will also provide recommendations in relation to:
  - a. The interaction of, and interdependencies between, the shipbuilding programs and sustainment programs inclusive of TRANSCAP, NPS Collins, Hunter and Stalwart) in the context of the CNS enablers. The analysis will explore how Australia can maintain availability to the fleet while managing the industrial base, and consider the impact of build rates on sustainment of the fleet. This research would determine the advantages, disadvantages, costs, and risks of sustaining the build schedule for naval platforms. It would consider the implications of different construction costs, workforce utilisation, support costs of the types of vessels being replaced, and the ability to support continuous naval shipbuilding at Henderson;
  - b. Life of type: review of the current life in service of our fleet including an assessment of the comparative costs between sustainment activities to extend the life of type of vessels

- against increased ship construction rates, including an outline of key assumptions with regards to investment, training programs etc.; and
- c. Fleet configuration: the number of vessels within the shipbuilding programs. The Contractor will develop a framework that allows decision makers to balance cost, schedule, capability, and national industrial policies in a consistent and transparent manner.
- 3.2 **Workforce:** establish the current and future capability of the shipbuilding and sustainment workforce at Henderson, including providing recommended workforce productivity rates that achieve a cost competitive and efficient workforce.
- 3.3 **Industry:** the Contractor shall assess the current sovereign shipbuilding and sustainment capabilities at Henderson, including design and engineering, combat systems and systems integration, program management, shipbuilding and production capability, supply chain management and sustainment capabilities.
- 3.4 **Sovereignty:** the Contractor shall establish an analytic framework for characterising and evaluating sovereign capability and consider whether the current and planned shipbuilding and sustainment programs will deliver a sovereign shipbuilding and sustainment enterprise. The Contractor shall also identify opportunities for investment to provide efficiency in achieving sovereign shipbuilding and sustainment objectives.
- 3.5 **Horizons:** provide a snapshot of what is possible for the Australian sovereign shipbuilding and sustainment enterprise at Henderson to deliver at each decade out to 2060, if Defence and the Government manages the enterprise within the parameters established through the Contractor's report.

To provide the written report, the Contractor will need to undertake research, as well as collection and collation of data (including through interviews). The advice should include suggestions or recommendations to Defence and the Australian Government to address any identified concerns or opportunities.

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# **Project Description**

## Review of Sovereign Australian Shipbuilding, Continuous Naval Shipbuilding and Sovereign Sustainment at Henderson, Western Australia

#### Principal Investigators: <sup>\$47F</sup>

#### OBJECTIVE

The purpose of the study is to provide an independent analysis and advice on the capability, capacity and sustainability of Henderseon shipyard as part of the conitnuous naval shipbuilding enterprise. The study is to identify the current and future status of the Australian shipbuilding related industries at Henderson, determine the impact of multiple ship designs and production on shipbuilding and infrastructure at Henderson, and review the impacts on Australian industry and long term sovereign shipbuilding. The study should consider the demand, workforce, industry, and sovereignty of the shipbuilding industry at Henderson out to 2060.

## BACKGROUND

In 2015, RAND was commissioned to deliver a report into Australia's naval shipbuilding industry which provided Defence with a greater understanding of the ability of Australia's shipyards, workers, and suppliers to produce, deliver, and support specific naval vessels as expected by Defence. **\$33(a)(iii)** 

This previous RAND analysis informed the Naval Shipbuilding Plan 20171, which laid the foundation for conintuous naval shipbuilding in Australia. The Plan envisioned Osborne Naval Shipyard (Osborne) as the prime construction facility for major surface combatants (SEA 5000) and submarines (the now cancelled SEA1000). The Plan Henderson Maritime Precinct (Henderson) would support minor naval vessel construction such as SEA1180 and SEA3036.

The Defense Strategic Update 20202 further expanded the portfolio of minor naval vessels and the following Force Structure Plan 2020 detailed 23 maritime projects between Osborne and Henderson. This increase in maritime projects significantly increased the projected long term demand for shipbuilding and sustainment at Henderson. The increase has prompted Defence to seek independent advice on the potential future capacity and capability of the sovereign shipbuilding and sustaintment enterprise and broader enablers at Henderson.

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<sup>&</sup>lt;sup>1</sup> Australian Government Department of Defence, *Naval Shipbuilding Plan*, May 16, 2017. As of 9/13/2022: https://www.defence.gov.au/business-industry/naval-shipbuilding/plan

<sup>&</sup>lt;sup>2</sup> Australian Government Department of Defence, *Defense Strategic Update*, July 1, 2020. As sof 9/13/2022: https://www.defence.gov.au/about/strategic-planning/2020-defence-strategic-update

#### APPROACH

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RAND Australia will be required to undertake the following tasks in the required timeframes, providing fortnightly updates to Defence through in-person meetings. At each meeting, the RAND Australia will provide an update on the progression of each tasking.



#### **CLASSIFICATION**

The final report will be classified PROTECTED.

RAND Australia will seek to complete as much work as possible on the Defence Protected Network (DPN) and will comply with Defence record management policy. s47G s47G

#### SCHEDULE AND DELIVERABLES

Assuming that approval to start work is given by 26 September 2022, we anticipate the following schedule of activities and deliverables.

Activity/deliverable	Dates	
Commencement	TBD	
Ongoing briefings	fortnightly	
1) Project Plan	1 week after start	
2) Interim Project Review	6 weeks after start	
3) Draft Report	9 weeks after start	
4) Final Report (pre-peer review)	12 weeks after start	
5) Final peer-reviewed & edited report	20 weeks after start	

RAND staff will be available to answer questions in relation to the findings and recommendations set out in the Final Report (4) for 8 weeks following its delivery.

This proposed scope of work may be subject to U.S. Export Control regulations. RAND's proposal and performance are therefore conditioned upon compliance with such regulations as required. Upon award and finalization of the work to be performed, RAND will perform an assessment and advise the sponsor as to what approvals, if any, are required to ensure compliance, and how best to incorporate such into the work.

Previous experience has shown that the TAA approval process with the U.S. State Department can take approximately 90-120 days and may result in project delay. RAND will work to expedite this process and minimize the likelihood of such delays.

#### PRINCIPAL INVESTIGATORS

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#### **PROJECT TEAM**

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**Mr. John Birkler** is a Senior Fellow at the RAND Corporation. He has held a variety of research and management positions since joining RAND in 1977; most recently, he managed RAND's Maritime Program, overseeing research for the U.S. Navy, Office of the Secretary of Defense, U.S. Special Operations Command (SOCOM), U.S. Coast Guard, the Australian DoD, and the UK Ministry of Defence, and mentors U.S. Navy, Marine Corps, and Coast Guard executive fellows at RAND. Birkler's research spans RDT&E strategies and



planning, industrial base, acquisition, management, and organization issues. In addition to the above maritime clients, his research has covered a wide range of aircraft systems (including the Joint Strike Fighter, F-15, F-14, B-1, B-2, A-12, C-5, C-17, F-117, F/A-18 E/F, F-22), missiles and munitions (including the advanced cruise missile, the Tomahawk cruise missile, and precision conventional munitions), and surface and subsurface combatants. He also has led studies on the links between the health of the defense industrial base and levels of innovation and competition. His most recent work has involved managing or leading multiple Analyses of Alternatives (AoAs) for the Navy, USMC and Army, and SOCOM, a high-profile Congressionally directed study of the health and competitive prospects of the U.S.military aircraft industrial base and multiple studies for Australia that addressed their capabilities and capacity to design and build conventional submarines and surface combatants. Birkler received his M.S. in nuclear and solid state physics from the University of South Carolina and completed the UCLA Executive Program in Management. After completing his third Command tour, he retired from the Navy Reserve with the rank of Captain.

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He is an engineer at the RAND Corporation. and has performed work for the U.S. Navy,

U.S. Coast Guard, SOCOM, U.S. Air Force, Australian DoD, and Canadian DND in topics including emerging and current technology, engineering and design, industrial base management, force structure, modeling and simulation, and wargaming. Prior to joining RAND, he was an engineer at a navy nuclear laboratory focusing on design and lifecycle management of nuclear systems and the regulation thereof. Before that, he was a civilian engineer for the U.S. Navy. He holds a B.S. in mechanical engineering from the University of Notre Dame, an M.E. in systems engineering for the Pennsylvania State University, \$47F,\$47G

and is a licensed professional engineer in the Commonwealth of Pennsylvania.

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Dr. Andrew Dowse AO is the Director of RAND Australia, which is based in Canberra. In this role, he manages policy research in support of Australian clients and delivers highquality research and analysis to inform Australian policymaking at both the Commonwealth and state/territory levels. He was s47F n the Royal Australian Air Force with star rank appointments in capability development, strategy and plans, and as the strategic J6. He retired at the rank of Air Vice-Marshal, s47F, s47G s47F, s47G

computer science from the University of New South Wales.

**Mr. Nicholas Johnson** is a Technical Analyst based. Previously, he performed work as a software test engineer concentrating on the modeling and simulation of an integrated training platform for Naval combat and weapons systems. To train the fleet's current combat teams, we utilized simulation tools to place warships in a synthetic environment and asses their response to incoming threats with a focus on integrated air and missile defense. Additionally, he has experience as a nuclear machinist mate where he was responsible for the operation of a nuclear power plant onboard the USS Dwight D. Eisenhower. After his time in the Navy, he performed quality assurance audits with Huntington Ingalls Industries overseeing the refueling of a prototype nuclear reactor. Nick graduated from Old Dominion University with a BS in Mechanical Engineering.





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# Review of Sovereign Australian Shipbuilding, Continuous Naval Shipbuilding and Sovereign Sustainment at Henderson Shipyard Project Plan 18 October 2022

# Background

In 2015, The Australian Department of Defence commissioned The RAND Corporation to review Australia's naval shipbuilding industry. This aim of this study was to provide Defence with a greater understanding of the ability of Australia's shipyards, workers, and suppliers to produce, deliver, and support specific naval vessels as expected by Defence. \$33(a)(iii) \$33(a)(iii)

**s33(a)(iii)** RAND's analysis recommended that Australia should dedicate two shipyards for Naval Shipbuilding. It envisioned Osborne Naval Shipyard (Osborne) as the prime construction facility for major surface combatants (SEA 5000) and submarines (the now cancelled SEA1000). It recommended that the Henderson Maritime Precinct (Henderson) should support minor naval vessel construction such as SEA1180 and SEA3036. This analysis informed the *Naval Shipbuilding Plan 2017*, providing the evidence base for Australia's approach to Continuous Naval Shipbuilding (CNS). In particular, it enacted RAND's recommendations in relation to the purposes of the respective shipyards. Defence made a significant investment in the Osborne Precinct to ensure state of the art construction facilities for Major Surface Combatants (Osborne South) and Submarines (Osborne North).

Responding to a deteriorating strategic environment, the Australian Government released the 2020 Defence Strategic Update and associated 2020 Force Structure Plan. This expanded the number of minor naval vessels that the Australian Government planned to acquire and maintain over the subsequent two decades. Subsequent Government announcements indicated that many of these are to be constructed in Australia as part of the broader CNS and Australian Industry Capability (AIC) policy agenda. If all proposed projects go ahead as outlined in the Force Structure Plan, there will be significant pressure placed on Henderson's ability to undertake the required shipbuilding and sustainment activities. The increase has prompted Defence to seek independent advice on the potential future capacity and capability of the sovereign shipbuilding and sustainment enterprise and broader enablers at Henderson.

As a result, RAND has been engaged by the Naval Shipbuilding and Sustainment Group (NSSG) to review the current and planned shipbuilding programs at Henderson focussing primarily on infrastructure (including the planned large vessel drydock), construction workforce, support capacity and security. This would be situated within the context of the Government's broader CNS agenda. Based upon this analysis, we will make recommendations on the capacity to successfully deliver the current and planned shipbuilding projects planned for the Henderson shipyard.

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# Timeline

Execution Date	14 October 2022
Program Plan	21 October 2022
Progress Briefing	25 November 2022
Draft Report	16 December 2022
Final Report (pre-peer review)	6 January 2023
Final Report (peer-review & edited)	3 March 2023

We will provide ongoing updates through fortnightly meeting with the NSSG staff.

We are currently planning on a small RAND U.S. team visiting Australia between 4-11 November 2022.