

The Auditor-General  
Auditor-General Report No.22 2019–20  
Performance Audit

# **Future Submarine Program — Transition to Design**

Department of Defence

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Canberra ACT  
14 January 2020

Dear Mr President  
Dear Mr Speaker

In accordance with the authority contained in the *Auditor-General Act 1997*, I have undertaken an independent performance audit in the Department of Defence titled *Future Submarine Program — Transition to Design*. Pursuant to Senate Standing Order 166 relating to the presentation of documents when the Senate is not sitting, I present the report of this audit to the Parliament.

Following its presentation and receipt, the report will be placed on the Australian National Audit Office's website — <http://www.anao.gov.au>.

Yours sincerely



Grant Hehir  
Auditor-General

The Honourable the President of the Senate  
The Honourable the Speaker of the House of Representatives  
Parliament House  
Canberra ACT

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# Audit snapshot

## Auditor-General Report No.22 2019–20

### Future Submarine Program — Transition to Design



#### Why did we do this audit?

- ▶ At a reported cost in the order of \$80 billion, the design and construction of the Future Submarine represents the largest Defence procurement in Australia's history.
- ▶ The decision not to acquire a military-off-the-shelf submarine platform, and instead engage a 'strategic partner' to design and deliver the submarines with significant Australian industry input, has increased the risk of this acquisition.
- ▶ There has been ongoing parliamentary and community interest in Defence's management of the Future Submarine Program.



#### What did we conclude?

- ▶ Defence has established the formal arrangements for the effective administration of the Future Submarine Program.
- ▶ The two key mandated design milestones were extended.
- ▶ The success of the program is dependent on Defence establishing an effective long term partnership with Naval Group.
- ▶ Defence has implemented risk mitigation strategies to manage the potential impact of a nine-month extension in the design phase against Defence's pre-design contract estimates.



#### Key facts

- ▶ The Department of Defence is in the process of acquiring 12 new submarines to replace the six Collins class submarines currently operated by the Royal Australian Navy.



#### What did we recommend?

- ▶ The Auditor-General did not make any recommendations, but did identify key messages relating to procurement.

- ▶ The submarines are to be designed and constructed by Naval Group Australia at the Osborne Shipyard in South Australia. Lockheed Martin Australia is the combat system integrator.
- ▶ A key agreement, the Future Submarine *Strategic Partnering Agreement*, was signed by Defence and Naval Group on 11 February 2019.
- ▶ The first contract entered into under the *Strategic Partnering Agreement* was the *Submarine Design Contract* signed on 1 March 2019.
- ▶ The first Future Submarine is expected to enter service in 2034.

# Summary

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## Background

1. The Department of Defence (Defence) is in the process of acquiring 12 new submarines. The 'Future Submarine' fleet is to replace the fleet of six Collins class submarines currently operated by the Royal Australian Navy (Navy), which without an extension to their service life, are due to be withdrawn from service by 2036.
2. In 2016 Defence reported the acquisition cost of the new submarines as more than \$50 billion (out-turned).<sup>1,2</sup> In November 2019, Defence advised the Senate that the acquisition cost of the Future Submarine was 'in the order of \$80 billion out-turned', with an estimated sustainment cost of \$145 billion out-turned to 2080.<sup>3</sup>
3. Following a competitive evaluation process to select a designer for the Future Submarine, on 26 April 2016, the Prime Minister announced that:

... the next generation of submarines for Australia will be constructed at the Adelaide shipyard, securing thousands of jobs and ensuring the project will play a key part in the transition of our economy.

DCNS [now Naval Group<sup>4</sup>] of France has been selected as our preferred international partner for the design of the 12 Future Submarines, subject to further discussions on commercial matters.

Subject to discussions on commercial matters, the design of the Future Submarine with DCNS will begin this year.<sup>5</sup>
4. The commercial relationship between Defence and Naval Group commenced with the *Future Submarine Program Design and Mobilisation Contract* signed on 30 September 2016. The overarching arrangements with Naval Group in relation to the Future Submarine Program were subsequently set out in the *Future Submarine Strategic Partnering Agreement* signed by Defence and Naval Group on 11 February 2019.

## Rationale for undertaking the audit

5. At a reported cost in the order of \$80 billion, the design and construction of the Future Submarine fleet represents the largest Defence procurement in Australia's history. Defence has described it as a 'megaproject' by all international standards and the most challenging acquisition

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1 See: *2016 Defence White Paper*, p. 90; and *2016 Defence Integrated Investment Program*, p. 77.

2 When considering and approving budgets, the Government takes into account the estimated impact of inflation over the life of a project, which is known as 'out-turning'. At the time of project approval, project managers estimate the impact of indices tendered (or estimated) for the life of the project. These estimates are built into the project budget as part of the out-turning process, which are revised as part of each budget review and update process.

3 Commonwealth, Senate Foreign Affairs, Defence and Trade Legislation Committee, 29 November 2019, evidence of Rear Admiral Gregory Sammut AO CSC RAN.

4 ANAO comment: Direction de Constructions Navales Services (DCNS) changed its name to Naval Group in June 2017. Naval Group is a French Public Limited Company. The French Government is Naval Group's majority shareholder with 62.25 per cent of shares; Thales owns 35 per cent of shares; current and former members of staff own 1.73 per cent of shares; and Naval Group owns 1.02 per cent of shares.

5 The Hon M Turnbull MP and Senator the Hon M Payne, (Prime Minister and Minister for Defence), *Future Submarine Program*, media release, 26 April 2016.

program it has undertaken, the success of which will be driven by preparations during the design phase. The decision not to acquire a military-off-the-shelf submarine platform, and instead engage a 'strategic partner' to design and deliver the submarines with significant Australian industry input, has increased the risk of this acquisition.

6. There has been ongoing parliamentary and community interest in Defence's management of the Future Submarine Program, particularly relating to: cost and capability; negotiation of the *Strategic Partnering Agreement* with Naval Group and the French Government; the possible emergence of a capability gap; the planned life-of-type extension of the Collins class to address any capability gap; and the Naval Shipbuilding Plan. This audit focuses on the platform design phase, which represents the largest material component of the program to date (approximately 47 per cent of all program expenditure as of 30 September 2019).

### **Audit objective and criteria**

7. The audit objective was to examine the effectiveness of Defence's administration of the Future Submarine Program to date. To form a conclusion against the objective, the ANAO adopted the following high-level audit criteria:

- Has Defence established a fit-for-purpose strategic partnership in accordance with government requirements?
- Is Defence meeting the planned design milestones for the Future Submarine Program?
- Has Defence's expenditure to date on design been effective in achieving the Future Submarine Program's milestones?

8. The audit scope included Defence's activities undertaken under the: *Design and Mobilisation Contract* (entered into in September 2016); *Strategic Partnering Agreement* (entered into in February 2019); and *Submarine Design Contract* (entered into in March 2019). The audit does not examine in any detail: non-design program activities and expenditures to date; the combat systems integrator contract with Lockheed Martin Australia; or the Collins class life-of-type extension.

### **Conclusion**

9. Defence has established the formal arrangements necessary for the effective administration of the Future Submarine Program, through the *Strategic Partnering Agreement*. However, the two key mandated design milestones were extended. Program success is dependent on the timely and cost-effective delivery of major design milestones.

10. Defence, through the *Strategic Partnering Agreement*, has established a fit-for-purpose strategic partnership framework that addresses the Government's objectives for the Future Submarine Program. The Agreement includes provisions which address 11 of the 12 documented contract goals and provide a basis for establishing a successful strategic partnership and delivering shared program objectives. Defence has assured the Government that the remaining contract goal has been addressed.

11. The program is currently experiencing a nine-month delay in the design phase against Defence's pre-design contract estimates, and two major contracted milestones were extended. As a result, Defence cannot demonstrate that its expenditure of \$396 million on design of the

Future Submarine has been fully effective in achieving the program's two major design milestones to date. Defence expenditure on design represents some 47 per cent of all program expenditure to 30 September 2019.

12. Defence's overall assessment of risk for the Future Submarine Program is 'high' and Defence has adopted relevant risk mitigation strategies, including the long-term partnership with Naval Group. This key relationship is at a relatively early stage and the parties' active management of both specific issues and the partnership is essential for effective risk management and program success.

## Supporting findings

### Strategic partnering

13. The *Strategic Partnering Agreement* negotiated with Naval Group establishes a contractual basis to meet the Commonwealth's objectives for the Future Submarine Program. To guide its negotiation of the Agreement, Defence established clear negotiating objectives and fit-for-purpose governance and oversight arrangements. Defence also escalated key issues for ministerial consideration during the negotiation process, and provided frank advice to government on areas requiring active management by the parties to mitigate program risk and achieve program objectives.

14. The key formal requirements for a successful long-term strategic partnership have been established through the signing of the *Strategic Partnering Agreement* in February 2019. The Agreement addresses 11 out of 12 documented contract goals, which relate to: governance; collaboration; the allocation of risk and reward; incentives and remedies; knowledge transfer; cost control; and industry objectives. The Agreement also establishes 'control gates' in the form of Mandated System Reviews based on defined exit and entry criteria, and contractual off-ramps and break payments.

### Program milestones, expenditure and risk

15. The Future Submarine Program is currently experiencing a nine-month delay in the design phase against Defence's pre-design contract milestones, and two major contracted milestones were extended.

16. Defence has highlighted for attention differences in the commercial and engineering approaches of Defence and Naval Group, which it considers to have impacted on progress to date. There is evidence of active contract management by Defence to address these issues.

17. The two key mandated design milestones — the Concept Studies Review and the Systems Requirements Review — were extended. As a result, Defence cannot demonstrate that its expenditure of \$396 million on design of the Future Submarine has been fully effective in achieving the program's two major design milestones to date. Defence expenditure on design work is a material component of the program, representing some 47 per cent of all program expenditure as at September 2019.

18. Defence has adopted risk management methodologies to identify and assess program risk, and has adopted relevant risk mitigation strategies. Defence's overall assessment of risk for the Future Submarine Program is 'high' and Defence has informed the Government of its risk

assessment and specific program risks. Establishing an effective long-term partnership between Defence and Naval Group is a key risk mitigation for the program. This relationship is at a relatively early stage and the parties' active management of both specific issues and the partnership is essential for effective risk management and program success.

19. Defence has identified that a delay in the Future Submarine Program of more than three years will create a gap in Navy's submarine capability. Defence's planning for a life-of-type extension for its Collins class submarines, to manage the risk of a capability gap, remains at an early stage.

## Summary of entity response

20. The proposed audit report was provided to the Department of Defence, which provided a summary response that is set out below. The letter of response is reproduced at Appendix 1.

Defence acknowledges the findings contained in the ANAO audit report, Future Submarines – Transition to Design.

Having established a fit-for-purpose strategic partnership framework through the Strategic Partnering Agreement, which addresses the Government's objectives for the Future Submarine Program, Defence has remained focused on thorough execution of the design phase of the Program and preparations for construction.

The first major milestone, Concept Studies Review, was exited under the Design and Mobilisation Contract within the resources allocated to that stage of design, acknowledging entry to this review occurred later than planned. Lessons from this review highlighted the need to allow additional time for Naval Group to meet Defence's requirements for a high level of design maturity before progressing to subsequent phases of the design, thereby reducing costly uncertainties during the build phase and the need for larger construction contingencies. These were major lessons learned from the Collins and Air Warfare Destroyer Programs.

An extended schedule for remaining design work has been implemented under the Submarine Design Contract – the first program contract to be executed under the Strategic Partnering Agreement. Design work has continued to progress to the required level of maturity under the Submarine Design Contract within allocated resources as demonstrated by entry to the second major milestone, Systems Requirements Review on 5 December 2019. The 5-week delay to entry is assessed as recoverable by the next major milestone, Systems Functional Review, scheduled January 2021.

Importantly, the commencement of construction activities in Australia, and the delivery of the Future Submarines has not been delayed.

Defence welcomes ongoing review of the Future Submarine Program by the ANAO.

## Key messages from this audit for all Australian Government entities

21. Below is a summary of key messages, including instances of good practice, which have been identified in this audit and may be relevant for the operations of other Australian Government entities.

### Procurement

- When planning for complex technical negotiations, consider establishing expert oversight arrangements to support the negotiating team.
- When undertaking complex negotiations, maintain adequate records, continually assess risks and engage actively with those charged with oversight.
- When negotiating and contracting for complex procurements, appropriately identify and advise government on major risks and proposed mitigation strategies.
- When developing long-term contracts, incorporate formal review and exit points.
- Complex contracts will generally require active management to achieve contracted outcomes. A clear and consistent approach to contract management, particularly in the early stages of a long-term relationship, will help establish mutual understanding between the parties.
- Realising value-for-money under a contract requires a close watch over the timely and cost-effective delivery of contracted milestones as well as the achievement of program outcomes.



## **Audit findings**

# 1. Background

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## Introduction

1.1 The Department of Defence (Defence) is in the process of acquiring 12 new submarines. The 'Future Submarine' fleet is to replace the fleet of six Collins class submarines currently operated by the Royal Australian Navy (Navy), which without an extension to their service life, are due to be withdrawn from service by 2036.

1.2 In 2016 Defence reported the acquisition cost of the new submarines as more than \$50 billion (out-turned).<sup>6,7</sup> In November 2019, Defence advised the Senate that the acquisition cost of the Future Submarine was 'in the order of \$80 billion out-turned', with an estimated sustainment cost of \$145 billion out-turned to 2080.<sup>8</sup>

1.3 The responsibilities within Defence for the Future Submarine Program are outlined in the Program's *Materiel Acquisition Agreement*.<sup>9</sup> Defence's Capability Acquisition and Sustainment Group (CASG) is the supplier of the Future Submarines and is responsible for administering Defence's contracts with the designer (Naval Group Australia), and combat system integrator (Lockheed Martin Australia). Navy is the customer and the Chief of Navy is the Capability Manager.<sup>10</sup>

## The Future Submarine Program

1.4 On 13 December 2018, the Minister for Defence announced that the Future Submarine will be known as the 'Attack class'.<sup>11</sup> Navy has stated that:

The Attack class SSGs [Guided Missile Submarines] will provide Australia with the highest levels of lethality and deterrence during periods of global uncertainty. They will have the capability to conduct a variety of missions independently, or as part of a task group in order to meet Australia's unique capability requirements. These included superior sensor performance and stealth characteristics, as well as range and endurance similar to the Collins class submarines.<sup>12</sup>

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6 See: *2016 Defence White Paper*, p. 90; and *2016 Defence Integrated Investment Program*, p. 77.

7 When considering and approving budgets, the Government takes into account the estimated impact of inflation over the life of a project, which is known as 'out-turning'. At the time of project approval, project managers estimate the impact of indices tendered (or estimated) for the life of the project. These estimates are built into the project budget as part of the out-turning process, which are revised as part of each budget review and update process.

8 Commonwealth, Senate Foreign Affairs, Defence and Trade Legislation Committee, 29 November 2019, evidence of Rear Admiral Gregory Sammut AO CSC RAN.

9 Materiel Acquisition Agreements are formal agreements which state concisely the products and services to be delivered by Defence's Capability Acquisition and Sustainment Group to Navy.

10 The *Strategic Partnering Agreement* between Defence and Naval Group envisages Naval Group's Australian Subsidiary, Naval Group Australia, will be the Future Submarine's builder.

11 The Hon C Pyne MP, Minister for Defence, 'Attack Class Future Submarine', media release, 13 December 2018.

12 <http://www.navy.gov.au/fleet/ships-boats-craft/future/ssg> [accessed 9 November 2019].

## Selecting the preferred designer

1.5 In February 2015, the Australian Government announced the acquisition strategy for the Future Submarine.<sup>13</sup> Prior to this announcement, Defence had:

- considered four possible options for designing and building the Future Submarine and determined that its preferred option was to develop a new design<sup>14</sup>; and
- determined that the Future Submarine would be designed and built by a proven submarine designer with recent experience in designing and building diesel-electric submarines.<sup>15</sup>

1.6 Following a competitive evaluation process to select a designer for the Future Submarine, on 26 April 2016, the Prime Minister announced that:

... the next generation of submarines for Australia will be constructed at the Adelaide shipyard, securing thousands of jobs and ensuring the project will play a key part in the transition of our economy.

DCNS [now Naval Group]<sup>16</sup> of France has been selected as our preferred international partner for the design of the 12 Future Submarines, subject to further discussions on commercial matters.

Subject to discussions on commercial matters, the design of the Future Submarine with DCNS will begin this year.<sup>17</sup>

1.7 Lockheed Martin Australia was selected as the Future Submarine's combat systems integrator in September 2016. On 25 January 2018, the Minister for Defence Industry announced a contract for \$700 million had been signed with Lockheed Martin Australia for the Future Submarine's Combat System design, build and integration.<sup>18</sup>

1.8 Appendix 2 of this report details the design and build phases of the Future Submarine Program.

## Contract arrangements for the Future Submarine Program

1.9 The commercial relationship between Defence and Naval Group commenced with the *Future Submarine Program Design and Mobilisation Contract* signed on 30 September 2016. The objectives of this contract were:

to conduct early mobilisation activities and commence preliminary design studies for the delivery of the Future Submarine Program...

13 The Hon K Andrews MP, Minister for Defence — *Statement on Australia's future submarine*, 9 February 2015; and Press Release — *Strategic direction of the Future Submarine Program*, 20 February 2015.

14 Auditor-General Report No. 48 2016–17, *Future Submarine—Competitive Evaluation Process*, paragraphs 2.2-2.3.

15 Ibid, paragraph 2.1.

16 Direction de Constructions Navales Services (DCNS) changed its name to Naval Group in June 2017. Naval Group is a French Public Limited Company. The French Government is the Naval Group's majority shareholder with 62.25 per cent of shares; Thales owns 35 per cent of shares; current and former members of staff own 1.73 per cent of shares; and Naval Group owns 1.02 per cent of shares.

17 The Hon M Turnbull MP and Senator the Hon M Payne, (Prime Minister and Minister for Defence), *Future Submarine Program*, media release, 26 April 2016.

18 The Hon C Pyne MP (Minister for Defence Industry); *'Another 200 Australian Jobs From Future Submarine Milestone'*, media release, 25 January 2018.

1.10 The *Design and Mobilisation Contract* between Defence and Naval Group identified that the *Strategic Partnering Agreement* was to be in place by 17 October 2017. The *Strategic Partnering Agreement* was signed by Defence and Naval Group on 11 February 2019. The *Strategic Partnering Agreement*:

... sets out the overarching arrangements with the Contractor in relation to the FSP [Future Submarine Program], including the responsibilities of the Contractor for the delivery of the Program. The SPA [*Strategic Partnering Agreement*] also contains the process for the Parties to enter into the Program Contracts, and the terms and conditions applicable to those Program Contracts, under which the Contractor will undertake the design, build, integration, test and delivery of the Future Submarines, and provide other Supplies, to deliver the Future Submarine capability in accordance with the FSP [Future Submarine Program] Objectives, as described in the SPA [*Strategic Partnering Agreement*].

1.11 The first contract entered into under the *Strategic Partnering Agreement* was the *Submarine Design Contract* signed on 1 March 2019.<sup>19</sup> The *Strategic Partnering Agreement* and *Submarine Design Contract* supersede the *Future Submarine Program Design and Mobilisation Contract*. However, the *Future Submarine Program Design and Mobilisation Contract* will remain open until specific items are delivered.

1.12 In addition, Defence, Naval Group (designer) and Lockheed Martin Australia (combat systems integrator) signed a *Tripartite Co-operative Arrangement* on 3 May 2017. While the purpose of the Arrangement was to set out agreed operating principles for the three entities, it is not a legally binding document and does not create a partnership or joint venture. The Arrangement outlines:

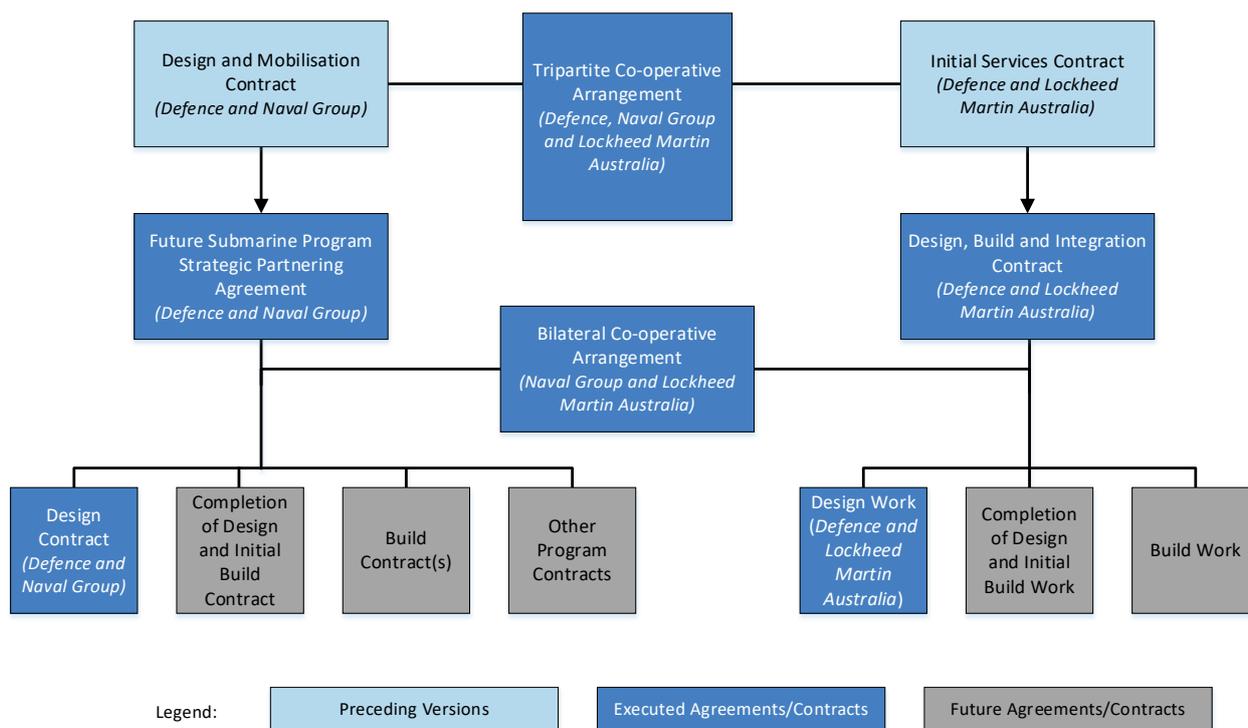
... the operating principles that the partners intend to follow in cooperating with each other to deliver the FSP [Future Submarine Program] in accordance with the bilateral agreements. These principles will be developed and refined as the various phases of the FSP [Future Submarine Program] evolve and mature.

1.13 Figure 1.1 illustrates the contractual architecture of the Future Submarine Program.

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19 Delivery of milestones against the *Submarine Design Contract* are discussed in Chapter 3.

**Figure 1.1: Contract architecture for the Future Submarine Program**

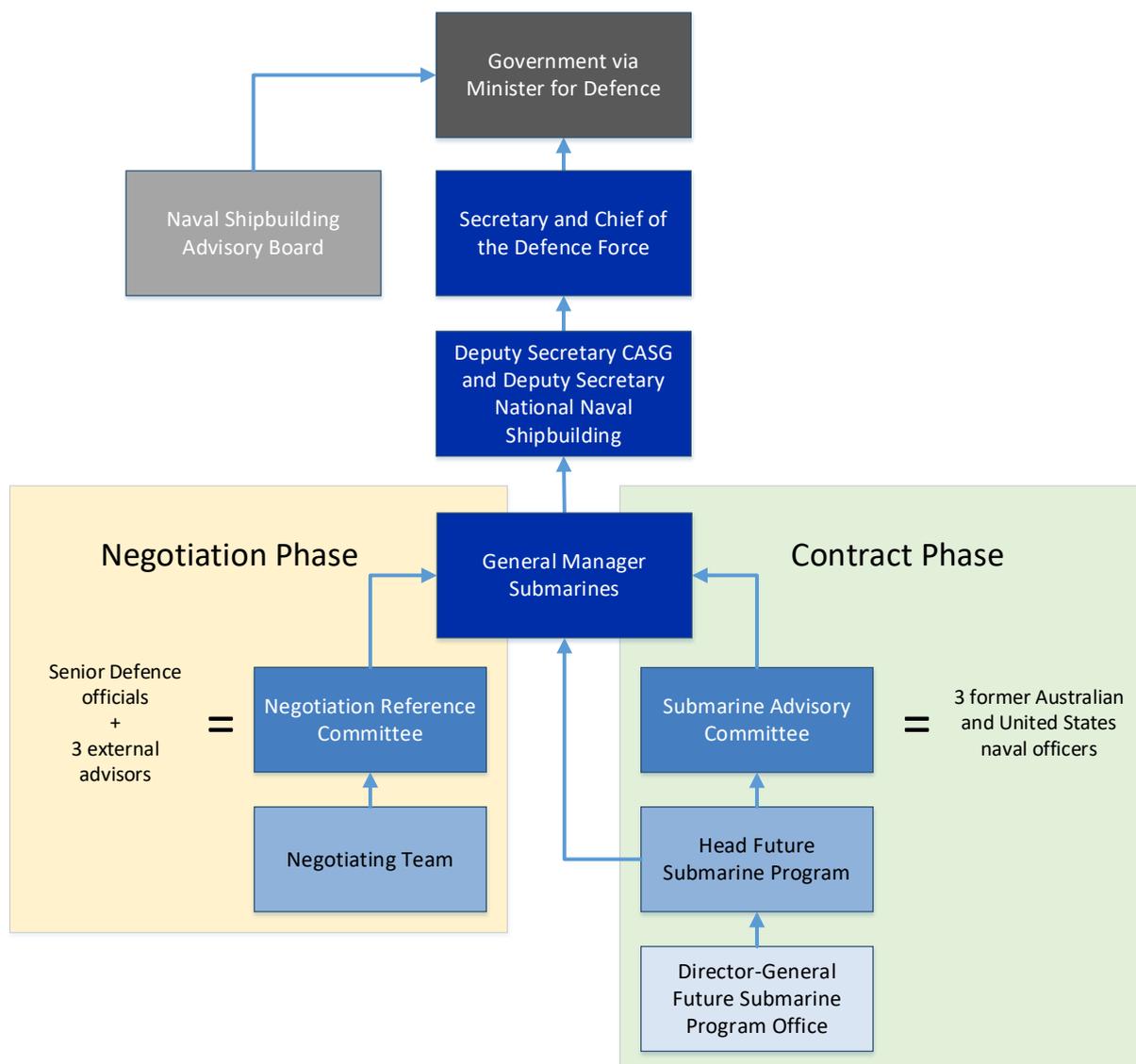


Source: ANAO analysis of Defence documentation.

### Governance arrangements

1.14 Figure 1.2 illustrates the governance arrangements that have been established by Defence for the Future Submarine Program.

**Figure 1.2: Governance arrangements for the Future Submarine Program**



Source: ANAO analysis of Defence documentation.

### Approved funding and expenditure

1.15 The *Future Submarine Program Design and Mobilisation Contract* set out a series of agreements to be executed in order to progress the Future Submarine design process. Table 1.1 summarises the expenditure of Naval Group and Lockheed Martin Australia as the Future Submarine Program’s prime contractors, as at 30 September 2019.

**Table 1.1: Prime contractor expenditure as at 30 September 2019**

Prime Contractors	Total cash expenditure (\$million)
Naval Group and Naval Group Australia (Platform Designers)	\$456.6
Lockheed Martin Australia (Combat System Integrator)	\$148.7
<b>Total</b>	<b>\$605.3</b>

Source: ANAO analysis of Defence documentation.

## Previous Auditor-General reports

1.16 This is the third in a series of performance audits examining the Future Submarine Program. The first audit, Auditor-General Report No. 48 2016–17, *Future Submarine—Competitive Evaluation Process*, examined the process underpinning the selection of an international partner to design 12 Future Submarines. The audit conclusion was that Defence effectively designed and implemented a competitive evaluation process to select an international partner for the Future Submarine Program.<sup>20</sup> The ANAO reported that the decision to select one design partner was made on the basis of Defence advice that it did not have the technical resources to retain two partners, and that:

The approach taken by Defence for the Future Submarine program removes competition in the design phase, and removes incentives for the international partner (DCNS) to produce a more economical and efficient build. This places the onus on Defence to ensure that its approach to the Future Submarine’s design and build phases, where final costs and schedules will be determined, returns value-for-money to the Commonwealth in the absence of a competitive process.<sup>21</sup>

1.17 The second audit, Auditor-General Report No. 39 2017–18, *Naval Construction Programs—Mobilisation*, examined the effectiveness of Defence’s planning for the mobilisation of its continuous shipbuilding programs, focusing on the Future Submarine, Future Frigate and Offshore Patrol Vessel programs. The *Naval Shipbuilding Plan*, which was released on 16 May 2017, outlines how Defence will deliver the naval capabilities outlined in the 2016 *Defence White Paper*, and develop a national shipbuilding enterprise in Australia. The ANAO concluded that successful implementation will depend on actively managing the high to extreme levels of associated risk.<sup>22</sup> The ANAO also reported that:

Defence first advised the Government in July 2015 that an Australian build of the Offshore Patrol Vessel, Future Frigate, and Future Submarine fleets carried ‘extreme risk’. Prior to the release of the *Naval Shipbuilding Plan* in May 2017, Defence again advised the Government of the high to extreme risk of a concurrent Australian build strategy for the Offshore Patrol Vessel, Future Frigate and Future Submarine programs. Risks were identified in relation to capability, affordability under the assumptions of the 2016 *Defence White Paper’s* Integrated Investment Program and reform of the shipbuilding industrial base.<sup>23</sup>

1.18 The ANAO further reported that while Defence had analysed the cost of implementing its program of naval construction for the 2016 *Defence White Paper*, key assumptions informing the cost of the naval construction programs have changed since its publication — the Government had decided that the Future Submarine would be built in Australia and the design and build schedule for surface ships had been brought forward (bringing forward expenditure). The ANAO recommended:

That Defence, in line with a 2015 undertaking to the Government, determine the affordability of its 2017 *Naval Shipbuilding Plan* and related programs and advise the Government of the

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20 Auditor-General Report No. 48-2016–17, *Future Submarine—Competitive Evaluation*, p. 7.

21 Ibid, p. 38.

22 Auditor-General Report No. 39 2017–18, *Naval Construction Programs—Mobilisation*, p. 8.

23 Ibid, p. 44.

additional funding required to deliver these programs, or the Australian Defence Force capability trade-offs that may need to be considered.<sup>24</sup>

## Joint Committee of Public Accounts and Audit inquiries

1.19 The Joint Committee of Public Accounts and Audit (JCPAA) conducted an inquiry into Auditor-General Report No. 39 2017–18. The Committee's February 2019 report from that inquiry (Report 475: *Defence First Principles Review, Naval Construction and Mental Health in the AFP*) included the following recommendation:

The Committee recommends that in relation to the naval construction programs, the Department of Defence report back to the Committee in July 2019 with an update on estimated financial costings that were previously released in the 2016 White Paper.<sup>25</sup>

1.20 Defence reported back to the Committee in August 2019, and in its response to this recommendation stated:

The 2016 Defence Integrated Investment Program provided broad guidance over a 20 year view (based on our understanding at the time of release) of the funding requirements in relation to the naval construction program, with delivery of some of these programs, for instance submarines and frigates, extending beyond this period.

The Department of Defence's estimates for its \$89 billion Naval Construction Programs [including the Offshore Patrol Vessel, Future Frigate and Future Submarine programs] remain unchanged as at the most recent Integrated Investment Program Bi-Annual review informing the Defence Portfolio Budget Statements 2019-20.<sup>26</sup>

1.21 The Future Submarine Program will be included in the ANAO Major Projects Report from 2019–20 following the endorsement of updated criteria for project selection by the JCPAA in September 2019.<sup>27</sup>

## Rationale for undertaking the audit

1.22 At a reported cost in the order of \$80 billion<sup>28</sup>, the design and construction of the Future Submarine represents the largest Defence procurement in Australia's history. Defence has described it as a 'megaproject' by all international standards and the most challenging acquisition program it has undertaken, the success of which will be driven by preparations during the design phase. The decision not to acquire a military-off-the-shelf submarine platform, and instead engage a 'strategic partner' to design, and deliver the submarines with significant Australian industry input, has increased the risk of this acquisition.

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24 Defence did not agree to the recommendation.

25 Joint Committee of Public Accounts and Audit, Report 475: *Defence First Principles Review, Naval Construction and Mental Health in the AFP*, February 2015, p. 24.

26 Department of Defence, *Executive Minute on Joint Committee of Public Accounts and Audit Report No. 475*, 13 August 2019.

27 The revised criteria enable the inclusion in the MPR of projects admitted one year after Second Pass Approval or projects at the pre-Second Pass Approval stage that have spent >\$500 million. The Future Submarines Design Acquisition (SEA 1000 Phase 1B) project will be included in the 2019-20 MPR on the basis of expenditure >\$500 million.

28 See footnote 8.

1.23 There has been ongoing parliamentary and community interest in Defence's management of the Future Submarine Program, particularly relating to: cost and capability; negotiation of the *Strategic Partnering Agreement* with Naval Group and the French Government; the possible emergence of a capability gap; and the planned life-of-type extension of the Collins class to address any capability gap; and the Naval Shipbuilding Plan. This audit focuses on the design phase, which represents the largest material component of the program to date (approximately 47 per cent of all program expenditure as of 30 September 2019).

## Audit approach

### Audit objective, criteria and scope

1.24 The audit objective was to examine the effectiveness of Defence's administration of the Future Submarine Program to date. To form a conclusion against the objective, the ANAO adopted the following high-level audit criteria:

- Has Defence established a fit-for-purpose strategic partnership in accordance with government requirements?
- Is Defence meeting the planned design milestones for the Future Submarine Program?
- Has Defence's expenditure to date on design been effective in achieving the Future Submarine Program's milestones?

1.25 The audit scope included Defence's activities undertaken under the: *Design and Mobilisation Contract* (entered into in September 2016); *Strategic Partnering Agreement* (entered into in February 2019); and *Submarine Design Contract* (entered into in March 2019). The audit does not examine in any detail: non-design program activities and expenditures to date; the combat systems integrator contract with Lockheed Martin Australia; or Collins class life-of-type extension.

### Audit methodology

1.26 The ANAO:

- reviewed records and data held by Defence, particularly CASG and Navy;
- conducted site visits to the Future Submarine Program Office in Adelaide and the Osborne shipbuilding precinct;
- held discussions with Defence personnel responsible for the Future Submarine Program; and
- held discussions with informed stakeholders and considered submissions provided by members of the community, including Submarines for Australia.

1.27 The audit was conducted in accordance with ANAO Audit Standards at a cost to the ANAO of approximately \$395,000.

1.28 The team members were Alex Wilkinson, Anna Peterson, Leo Simoens, William Kelly, Cherise Reed and Sally Ramsey.

## 2. Strategic Partnering

### Areas examined

This chapter examines whether Defence has established a fit-for-purpose strategic partnership in accordance with government requirements.

### Conclusion

Defence, through the *Strategic Partnering Agreement*, has established a fit-for-purpose strategic partnership framework that addresses the Government's objectives for the Future Submarine Program. The Agreement includes provisions which address 11 of the 12 documented contract goals and provide a basis for establishing a successful strategic partnership and delivering shared program objectives. Defence has assured the Government that the remaining contract goal has been addressed.

2.1 The following criteria were used to assess whether Defence has established a fit-for-purpose strategic partnership in accordance with government requirements:

- Did Defence negotiate a *Strategic Partnering Agreement* that addressed government objectives?
- Did the *Strategic Partnering Agreement* establish the key requirements for a successful strategic partnership?

### Did Defence negotiate a *Strategic Partnering Agreement* that addressed government objectives?

The *Strategic Partnering Agreement* negotiated with Naval Group establishes a contractual basis to meet the Commonwealth's objectives for the Future Submarine Program. To guide its negotiation of the Agreement, Defence established clear negotiating objectives and fit-for-purpose governance and oversight arrangements. Defence also escalated key issues for ministerial consideration during the negotiation process, and provided frank advice to government on areas requiring active management by the parties to mitigate program risk and achieve program objectives.

### Government objectives for the Future Submarine Program

2.2 The Commonwealth's objectives for the Future Submarine Program are:

- to deliver a regionally superior submarine capability that provides the Commonwealth with enduring sovereign control over the operation and sustainment of the fleet;
- to address Australian regulatory safety and environmental obligations in the submarine design and through developing a sound Mission System Seaworthiness Case;
- to deliver an affordable Future Submarine capability within a realistic timeframe and with the knowledge and skills to understand and control sustainment cost drivers for the life of the class; and
- to maximise Australian industry involvement through all phases of the Future Submarine Program without unduly compromising capability, cost and schedule.

2.3 Defence's objective in negotiating the *Strategic Partnering Agreement* was to establish a contractual basis to meet the Commonwealth's objectives for the Future Submarine Program.

2.4 The *Strategic Partnering Agreement*, signed on 11 February 2019, forms the overarching agreement between the Australian Government and Naval Group for the acquisition of the Future Submarine capability. Defence advised the Government in February 2019:

The SPA [Strategic Partnering Agreement] is a key element of the FSP's [Future Submarine Program's] risk management framework and its purpose is to set out:

- the overarching contractual framework that will apply across the phases of the FSP;
- the objectives of the FSP;
- the respective commitments of the parties with respect to the delivery of the FSP;
- the governance and working arrangements between the parties including collaboration and cooperation with Lockheed Martin Australia (LMA) as the Combat System Integrator;
- the pricing models to apply to the various phases of the FSP; and
- the process for entering into the contracts for Naval Group and/or NGA to carry out the work and to provide the required supplies to deliver the FSP (the 'Program Contracts').

2.5 The provisions of the *Strategic Partnering Agreement* apply to all contracts subsequently signed between Defence and Naval Group under the Future Submarine Program, including any future build contracts. As set out in Figure 1.1, there are a number of program contracts to be established under the *Strategic Partnering Agreement* in order to deliver the program.<sup>29</sup>

### **Negotiation of the *Strategic Partnering Agreement***

2.6 The Defence *Strategic Partnering Agreement* negotiating team comprised senior Defence staff and contracted subject matter experts.<sup>30</sup> A Negotiation Reference Committee was established in November 2017 to provide advice and guidance to the negotiating team. The Committee had terms of reference and a membership which comprised senior Defence officials and three external advisors.<sup>31</sup>

29 The first of these program contracts was the *Submarine Design Contract*, which is discussed in paragraphs 3.22–3.23.

30 Rear Admiral Gregory Sammut AO CSC RAN (Lead Negotiator, Head Future Submarine Program); David Goodrich (Strategic Negotiation Advisor, Silver Spirit Partners); Barry Barnes (Strategic Program Advisor, ICCPM Solutions); Gunnar Galsgaard (Technical Advisor, Contractor); Richard Hazeldean (Technical Advisor, RDA); David Gordon (Technical Advisor, ICCPM Solutions); Liesl Omeara (Contracting/Legal Advisor, Defence); Steven Power (Contracting/Legal Advisor, Clayton Utz); Brian O'Callaghan (Contracting/Legal Advisor, Clayton Utz); Brett Freebody (Finance Advisor, Freebody Cogent); Peter Cain (Finance Advisor, Defence); and Melanie Hourigan (Secretariat, Chief Contracting Officer, Defence).

31 See Figure 1.2 regarding governance arrangements. Members of the Negotiation Reference Committee were Ms Rebecca Skinner (Defence); Vice Admiral Michael Noonan RAN AO (Defence); Mr Tony Fraser (Defence); Mr Ron Finlay AM; Mr Brendan Sergeant; and Professor Elizabeth Taylor AO.

2.7 Additional oversight was provided by the Naval Shipbuilding Advisory Board. The Board was established in December 2016 to provide expert third party advice to government on all aspects of naval shipbuilding.<sup>32</sup>

### *Threshold issues at the commencement of negotiations*

2.8 In 2016, Defence identified its threshold issues for the negotiation process as:

- pricing models;
- contractor default;
- regionally superior submarine capability and sovereignty;
- Naval Group Australia’s corporate governance;
- intellectual property and data rights;
- allocation of responsibilities between the Commonwealth of Australia, Naval Group and Lockheed Martin Australia;
- fitness for purpose of the submarine;
- consequences of unilateral rights of the Commonwealth of Australia;
- consequences of termination, break payments, contract architecture;
- approval/acceptance/warranty regime; and
- levels of Australian industry capability.

2.9 In December 2017, Defence approved a Contract Negotiation Directive<sup>33</sup> to instruct the negotiating team of the following: roles and responsibilities; negotiation objectives and principles; the Commonwealth’s preferred and ‘fall-back’ positions on threshold negotiation issues; and the anticipated schedule.

2.10 A new Contract Negotiation Directive was issued in April 2018, replacing the December 2017 Directive. The new Directive took into account emerging issues in the negotiation process.

### *Record of negotiations*

2.11 Defence records indicate that negotiations commenced in November 2017 and concluded in November 2018. There were a total of 12 negotiation sessions (see Appendix 3) covering over 100 days. During preliminary negotiation discussions in November 2017, Defence and Naval Group signed Negotiation Principles and agreed to a Negotiation Charter and schedule. In addition to the threshold issues identified in paragraph 2.8 above, Defence also identified subcontracting as an area of focus — in particular, intellectual property rights, subcontracting to Australian industry and cost transparency.

2.12 Minutes of negotiations were prepared and were signed by the lead negotiators from Defence (on behalf of the Commonwealth) and Naval Group. The minutes captured the outcomes of the negotiation sessions and the approach agreed by both parties for the next session.

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32 The Naval Shipbuilding Advisory Board is chaired by Professor Donald Winter. Members of the board are Mr Martin Bean CBE; Mr Mike Burgess; Hon Emily DeRocco; Rear Admiral Thomas Eccles USN (Ret); Mr Irwin Edenzon; Mr Ronald Finlay AM; Vice Admiral William Hilarides USN (Ret); Ms Lisa Paul AO PSM; Ms Becky Stewart; Vice Admiral Paul Sullivan USN (Ret); and Dr Lesley Seebeck.

33 The Contract Negotiation Directive was prepared in accordance with the requirements of the Defence Procurement Policy Manual, April 2017.

2.13 As the negotiations progressed, areas of focus included: profit rates; fitness for purpose of the submarine; liability cap; insurance; management services fees; circumstances in which a break payment would be payable by the Commonwealth; and clauses relating to contract termination. The negotiation process also identified differences in the commercial, engineering and manufacturing approaches of Defence and Naval Group, which were considered by Defence to require ongoing attention.<sup>34</sup>

#### *Advice by Defence to oversight committees and the Government during negotiations*

2.14 The lead Defence negotiator for the *Strategic Partnering Agreement* provided fortnightly or monthly briefings to the Negotiation Reference Committee on the progress of negotiations. The final Negotiation Reference Committee report documented that there were 23 Committee meetings held between November 2017 and December 2018. The final report from the Negotiation Reference Committee was provided to the Government in February 2019.

2.15 Internal advice provided to the Negotiation Reference Committee was frank and reported on the timing and risks relating to the negotiation process. For example, in its brief to the Committee dated 12 November 2018, the negotiation representatives advised that the date for signature of the *Strategic Partnering Agreement* and *Submarine Design Contract* was moving into late March/early April 2019. On 3 December 2018, the Head Future Submarine Program provided a further report to the Committee highlighting that:

The Future Submarine Program will be the most challenging acquisition program to be undertaken by Defence. It will be a megaproject by all international standards.

As challenging as construction will be (where 90% of the funding will be spent), success will be driven by preparations during the design of the Future Submarine, when much of the engineering effort will be required, supported by enabling disciplines including program management and procurement.

Negotiation of the Strategic Partnering Agreement with Naval Group has been challenging, and has taken longer than anticipated.

2.16 In that report, the Head Future Submarine Program advised that Defence was satisfied with the agreed allocation of risks and liabilities within the *Strategic Partnering Agreement*. The briefing also reported on: Defence's assessment of the 'success factors' for effective delivery of a megaproject and an effective strategic partnership; the assessed 'risks to the uniform achievement of the Future Submarine Program objectives'; as well as 'other risk factors that are already placing achievement of the Future Submarine Program at risk'.

2.17 Defence records indicate that the Naval Shipbuilding Advisory Board met 11 times from June 2017 to February 2019 to consider Defence's naval construction programs. During the negotiation period, the Board considered eight submissions from the Future Submarine Program on the progress of negotiations. Defence reporting to the Board included both Defence's assessment of significant risks to the Future Submarine Program and risks involved in entering into

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34 As discussed in paragraphs 3.21–3.27 of this report, the parties have had to work actively since the *Strategic Partnering Agreement* was signed in February 2019 on establishing a shared understanding of how to operationalise negotiated outcomes so as to realise program objectives and reduce program risk.

the *Strategic Partnering Agreement* with Naval Group. The Board made recommendations to government regarding its approach to the Program.<sup>35</sup>

2.18 In September 2018, the Board recommended to government that Defence examine alternatives should negotiations not succeed in the achievement of its requirements for the *Strategic Partnering Agreement*. The Board also commented that Defence should assess whether program risks outweighed the benefits of proceeding even if negotiations succeeded on the *Strategic Partnering Agreement*.

2.19 In respect to the Naval Shipbuilding Advisory Board's recommendation, in September 2019 Defence advised the ANAO that:

The Naval Shipbuilding Advisory Board recommended that Defence consider alternatives to the current plan in the context of determining if there was a best alternative to a negotiated agreement (BATNA) in the event contract negotiations were not successful. In response to this, Defence examined the additional service life of the Collins class that would be delivered under life-of-type extension activities, and the time this would allow to develop a new acquisition strategy for the Future Submarine if necessary. The Naval Shipbuilding Advisory Board expressed a separate view that, even if the Strategic Partnering Agreement negotiations were successful, Defence consider if proceeding is in the national interest. This consideration was represented in the advice to Government seeking approval to enter the Strategic Partnering Agreement.<sup>36</sup>

2.20 In the course of negotiations, Defence escalated issues for the consideration of the Defence Minister and/or Prime Minister on three occasions. The issues related to:

- Defence's approach to the negotiations;
- Defence's right to terminate for default any Future Submarine Program contracts with Naval Group in the event of a change of ownership of Naval Group; and
- liability caps.

### **Finalising the *Strategic Partnering Agreement***

2.21 On 10 December 2018, Defence advised the Government that the proposed *Strategic Partnering Agreement* established a contractual basis to meet the Commonwealth's objectives for the Future Submarine Program, identified above in paragraph 2.2. Defence proposed that:

- the Minister for Defence bring forward a submission in early 2019 seeking approval to enter the *Strategic Partnering Agreement* and the *Submarine Design Contract*, and
- Australia agree to France's position on a key issue in the negotiations, relating to Australia's rights in the event of a Change of Control of Naval Group.<sup>37</sup>

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35 Relevant Board reports are dated December 2017, as well as March, April, July, September and November 2018.

36 As identified in Table 2.1, the contractual framework provides the Commonwealth with a range of appropriate remedial measures and protections, for example off ramps, in the event of poor Contractor performance.

37 The French Government is the majority shareholder in Naval Group. The French position was that Australia does not have the right to terminate the *Strategic Partnering Agreement* for default should the Commonwealth and French Government authorities not agree on the measures that the French Government would take to secure assets and expertise in Naval Group for execution of the Future Submarine Program ahead of a Change of Control of Naval Group.

2.22 On 8 February 2019, Defence sought approval from the Government to enter into the *Strategic Partnering Agreement* with Naval Group, along with the first program contract with Naval Group under the *Strategic Partnering Agreement* — the *Submarine Design Contract*. In its advice to the Government, Defence identified a number of areas as requiring active management by the parties to mitigate program risk and achieve program objectives:

- effective engagement by the parties to build a partnership based on transparency, collaboration and leadership commitment to program objectives;
- staffing the program with the right number of suitably qualified and experienced personnel;
- appropriate skills development in the new subsidiary, Naval Group Australia, to undertake progressively more engineering and procurement activities;
- the effective procurement of equipment to meet Australia’s capability needs;
- effective program planning;
- embracing methods and processes reflecting a best-for-program approach; and
- effective engagement with Australian industry.

2.23 The briefing also identified that the risks for the Commonwealth included:

- the maintenance of a competent and sustainable workforce for Defence to continue to lead the delivery of the Future Submarine Program as an informed and intelligent partner; and
- development of a capable workforce within industry to execute the program effectively and with increasing productivity over time.

2.24 To inform its advice to government, Defence commissioned RAND Corporation to undertake an initial assessment of Naval Group’s costings for the design process. The 18 May 2018 RAND report informed Defence’s advice on value-for-money issues. RAND Corporation’s assessment was:

The overall design costs appear to be consistent with similar programs. The total design labour hours are consistent with a new submarine design using modern design tools and the labour rates are consistent with other industry benchmarks.

2.25 As a deliverable of the *Design and Mobilisation Contract*, there was an objective to sign the *Strategic Partnering Agreement* by 17 October 2017. The *Strategic Partnering Agreement* was signed on 11 February 2019, nearly 16 months later than the objective. In September 2019, Defence advised the ANAO of the following reasons for delay in commencing negotiations:

Preliminary discussions on principles applying to the *Strategic Partnering Agreement* were conducted during the course of 2017 ahead of drafting the *Strategic Partnering Agreement* and commencing formal negotiations. These discussions proved necessary in developing an understanding of Naval Group’s commercial approach. As these discussions unfolded, Defence progressively reached the point at which it was appropriate to develop the full draft of the *Strategic Partnering Agreement* as a basis for negotiations. The draft was provided to Naval group in September 2017, allowing negotiations to commence in November 2017.

2.26 Resolution of a number of the issues outlined in paragraph 2.13 (above) contributed to the delay in negotiations. Defence records indicate that within the Future Submarine Program Office,

which led the negotiations, there was an acceptance that delays in the negotiation process were a cost of achieving acceptable terms and conditions in the Agreement:

...we need to continue to act with consistency (and integrity), and avoid expediency. We will do long term damage to the Program by trying to avoid any shorter term delays to ensure we secure appropriate terms and conditions.

2.27 Defence advised the ANAO in September 2019 that notwithstanding the delay in negotiations and other specific milestone slippages<sup>38</sup>, it was too soon to vary the delivery date for the Future Submarine Program.

### Does the *Strategic Partnering Agreement* establish the key requirements for a successful strategic partnership?

The key formal requirements for a successful long-term strategic partnership have been established through the signing of the *Strategic Partnering Agreement* in February 2019. The Agreement addresses 11 out of 12 documented contract goals, which relate to: governance; collaboration; the allocation of risk and reward; incentives and remedies; knowledge transfer; cost control; and industry objectives. The Agreement also establishes ‘control gates’ in the form of mandated system reviews based on defined exit and entry criteria, and contractual off-ramps and break payments.

2.28 As discussed in paragraph 2.2, the Government has set out objectives for the Future Submarine Program. Defence advised the Government in February 2019 that the *Strategic Partnering Agreement* was negotiated to support delivery of the Future Submarine Program and achieve those objectives<sup>39</sup>:

The key provisions of the SPA [Strategic Partnering Agreement] agreed with Naval Group form a contractual basis for achieving these objectives and will allow a value for money outcome for the Commonwealth to be achieved. This assessment has been made after judging the suitability of the Future Submarine Program contractual framework to achieve the following specific goals through an appropriate balance of rights, remedies, and incentives within the Strategic Partnering Agreement.

2.29 The specific goals referenced by Defence in its February 2019 advice to the Government are discussed below.

### Defence’s contractual framework goals

2.30 Defence has identified 12 specific goals that the rights, remedies and incentives in the *Strategic Partnering Agreement* aim to achieve. Table 2.1 outlines those goals and the related provisions set out in the Agreement.

38 Other program delays are discussed in paragraphs 3.14–3.27 of this audit report.

39 The Future Submarine Program objectives are stated in paragraph 2.2 above.

**Table 2.1: Future Submarine Program contractual framework goals and *Strategic Partnering Agreement* provisions**

Goal	Goal Statement	ANAO analysis of the Strategic Partnering Agreement provisions
1	The contractual framework reflects the undertakings and commitments of Naval Group during the Competitive Evaluation Process (CEP), which were the basis of Naval Group's selection.	Defence advised the Government in February 2019 that:  The undertaking and commitments of Naval Group in the CEP Final Deliverables and Commitment Deeds have been incorporated into the SPA Conditions of Agreement (COA), Conditions of Contract (CoC) and the Approved Subcontractor Deeds.
2	The contractual framework supports an enduring, collaborative strategic relationship between the Commonwealth, Naval Group and the Combat System Integrator.	Under the Agreement, the Commonwealth and Naval Group are required to adhere to defined Collaboration and Cooperation Principles and a Program Charter. <sup>a</sup>  Schedule 4 of the Agreement identifies program governance arrangements, including: the governance framework; bilateral and tripartite governance arrangements; and joint working arrangements.  Dispute resolution mechanisms are included in the Agreement.
3	The contractual framework allows the Future Submarine Program to operate on a sound commercial basis, providing for an appropriate allocation of risk and reward, reflected in a range of suitable incentives and remedies framed around the risks at the different stages of the program.	The contractual framework defines three different pricing models and associated rules to be applied at different stages of the Future Submarine Program depending on risks and uncertainties in relation to the work to be performed under that program contract. Break payments are payable for early termination.
4	The contractual framework places accountability on Naval Group for the quality and effectiveness of its work and management of interfaces together with the Combat System Integrator, to ensure the Attack class fleet and support systems are fit for purpose.	Mechanisms include: <ul style="list-style-type: none"> <li>• Requirement for Naval Group to implement industry best practice methods, processes, systems and standards.<sup>b</sup></li> <li>• Contractual obligations to meet the Commonwealth's requirements in relation to quality and performance.</li> <li>• Use of mandated design and review points with each review comprising entry and exit criteria that Naval Group must meet to proceed to the next phase.</li> <li>• Arrangements for periodic formal reviews of Naval Group's planned progress and expenditure against actual performance, including remedies for non-performance.</li> <li>• Schedule 4 includes an expectation for collaboration between Naval Group and Lockheed Martin Australia to ensure integration of the combat system is executed within an integrated master schedule and risks are managed.</li> </ul>

Goal	Goal Statement	ANAO analysis of the Strategic Partnering Agreement provisions
5	The contractual framework includes appropriate obligations and rights concerning intellectual property, Australian industry capability, transfer of technology, access to technical data and cost transparency.	<p>The Commonwealth has obtained intellectual property rights that aim to meet the Commonwealth's sovereignty requirements.</p> <p>The Agreement requires Naval Group Australia to develop and implement a Transfer of Technology program in line with the requirements of the program contracts to ensure that sufficient technology, know-how and know-why is transferred to the Commonwealth and to Australian industry</p> <p>Note: Cost transparency is addressed below in Goal 7, and industry capability below in Goal 10.</p>
6	The contractual framework promotes the establishment of a capable and competent NGA [Naval Group Australia] as the builder of the Attack class fleet and as the enduring Design Authority for sustainment that operates under sound governance and management arrangements underpinned by appropriate means for the Commonwealth to protect its interests including through asset securities.	Naval Group Australia has been established as a single purpose subsidiary in Australia for the purpose of the Future Submarine Program. Naval Group Australia is a party to the Agreement which establishes roles and responsibilities for Naval Group Australia. The Commonwealth has appropriate controls in place for the delivery of the Future Submarine Program's objectives.
7	The contractual framework includes suitable mechanisms to manage and control cost over the life of the Future Submarine Program.	<p>Mechanisms include:</p> <ul style="list-style-type: none"> <li>• Requirement for Naval Group to submit Program Cost Estimates that track the refinement of cost as design decisions are made.</li> <li>• Naval Group required to provide transparency of program expenditure during Commonwealth audits and is required to implement a program management system compliant with Australian standards within Naval Group Australia.</li> <li>• Requirements for Naval Group to achieve efficiencies and manage cost effectively.</li> </ul>
8	Notwithstanding arrangements to ensure a long term strategic partnership, the contractual framework provides the Commonwealth with a range of appropriate remedial measures and protections, for example off ramps, in the event of poor Contractor performance.	The Agreement contains rights, remedies and incentives, including protections, 'control gates' in the form of mandated system reviews based on defined exit and entry criteria, and establishes contractual off-ramps.

Goal	Goal Statement	ANAO analysis of the Strategic Partnering Agreement provisions
9	The contractual framework allows for the efficient and effective implementation of Program Contracts to support program execution.	The operative terms and conditions that will apply to program contracts are contained in the <i>Strategic Partnership Agreement</i> . These terms and conditions are included in schedules to the Agreement and apply to all program contracts. The terms and conditions include: <ul style="list-style-type: none"> <li>• Conditions of Contract;</li> <li>• Pricing models;</li> <li>• Common glossary; and</li> <li>• Template Statement of Work.</li> </ul> On this basis, the time required to negotiate and execute each program contract is expected to be reduced.
10	The contractual framework promotes the establishment of a sustainable industry base in Australia with maximum opportunities for involvement in the delivery and sustainment of the Attack class fleet without unduly compromising cost, capability or schedule.	Naval Group is required to: <ul style="list-style-type: none"> <li>• Deliver an Australian Industry Program and to prepare an Australian Industry Capability strategy and Australian industry capability plans for each stage of the Future Submarine Program detailing plans, procedures, responsibilities and timeframes for the development of Australian industry.</li> <li>• Utilise Australian industry, and develop an Australian industry base; and establish and maintain a sustainable supply chain.</li> </ul>
11	The contractual framework ensures the subcontracts entered into by Naval Group and NGA [Naval Group Australia] include appropriate obligations to support achievement of the preceding goals.	Under the Agreement, Naval Group is required to flow down similar requirements to its key sub-contractors for the supply of major Future Submarine systems, and the approval of the Commonwealth is required to enter into such subcontracts.
12	The contractual framework preserves the Commonwealth's sovereign right to make decisions with respect to the Program on fair and reasonable terms.	The Agreement allows Defence to reduce the scope of work in contracts between Defence and Naval Group, or terminate the contract(s), providing compensation to Naval Group where applicable.

Note a: On 3 May 2017, the parties entered into the *Tripartite Cooperative Arrangement*, a non-binding agreement that establishes the framework, principles and ways of working for delivery of the Future Submarine Program.

Note b: The phrase 'industry best practice' is not defined in the *Strategic Partnering Agreement*.

Source: ANAO analysis of Defence documentation.

2.31 As shown in Table 2.1, the *Strategic Partnering Agreement* includes provisions which address 11 of the 12 documented contract goals as a basis for establishing a successful strategic partnership and delivering shared program objectives. For the remaining goal (Goal 1) Defence has asserted to government that the undertakings and commitments of Naval Group during the competitive evaluation process have been incorporated into the *Strategic Partnering Agreement*.<sup>40</sup>

<sup>40</sup> The competitive evaluation process is discussed in paragraph 1.6 of this report, and in Auditor-General Report No. 48 2016-17, *Future Submarine—Competitive Evaluation Process*.

2.32 As discussed in paragraphs 2.13 and 2.22, the negotiation process identified differences on a range of issues — including the commercial, engineering and manufacturing approaches of Defence and Naval Group — which were considered by Defence to require ongoing attention and active management. Since the *Strategic Partnering Agreement* was signed, in February 2019, the parties have worked at establishing a shared understanding of how to operationalise key elements of the Agreement framework to realise shared program objectives and reduce program risk. While there is evidence of active contract management by Defence (see paragraphs 3.13–3.27), it is too early to assess the success of the *Strategic Partnering Agreement* or the partnership between Defence and Naval Group.

## 3. Program design milestones, expenditure and risk

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### Areas examined

This chapter examines Defence's progress against the planned design milestones for the Future Submarine Program, and the effectiveness of Defence's expenditure to achieve these milestones.

### Conclusion

The program is currently experiencing a nine-month delay in the design phase against Defence's pre-design contract estimates, and two major contracted milestones were extended. As a result, Defence cannot demonstrate that its expenditure of \$396 million on design of the Future Submarine has been fully effective in achieving the program's two major design milestones to date. Defence expenditure on design represents some 47 per cent of all program expenditure to 30 September 2019.

Defence's overall assessment of risk for the Future Submarine Program is 'high' and Defence has adopted relevant risk mitigation strategies, including the long-term partnership with Naval Group. This key relationship is at a relatively early stage and the parties' active management of both specific issues and the partnership is essential for effective risk management and program success.

3.1 The following criteria were used to assess Defence's progress against the planned design milestones for the Future Submarine Program, and the effectiveness of Defence's expenditure to achieve these milestones:

- Is Defence meeting the planned design milestones for the Future Submarine Program?
- Has Defence's expenditure to date on design work been effective in achieving the Future Submarine Program's design milestones?
- Has Defence identified, assessed and treated risk relating to the Future Submarine Program effectively?

### Is Defence meeting the planned design milestones for the Future Submarine Program?

The Future Submarine Program is currently experiencing a nine-month delay in the design phase against Defence's pre-design contract milestones, and two major contracted milestones were extended.

Defence has highlighted for attention differences in the commercial and engineering approaches of Defence and Naval Group, which it considers to have impacted on progress to date. There is evidence of active contract management by Defence to address these issues.

### Planned design milestones for the Future Submarine Program

3.2 Defence documented the planned major design milestones for the Future Submarine Program's Platform System in its Integrated Master Schedule in 2017, which was attached to the *Design and Mobilisation Contract*. These milestones were updated in the *Submarine Design Contract*. They are summarised in Table 3.1.

**Table 3.1: Future Submarine Program major design milestones**

Milestone	Defence’s original planned milestone date	Contracted milestone date
Information Communication Technology/Transfer of Technology Way Forward Review	Not included	September 2019
Systems Requirements Review (Definition Phase, Platform Systems) <sup>a</sup>	March 2019	October 2019
Preliminary Design Review (Platform Systems) <sup>b</sup>	March 2020	January 2021
Critical Design Review	June 2022	Not contracted to date

Note a: Defence advised in the *Submarine Design Contract* this review point was renamed Functional Ship Systems Requirements Review (Definition Phase) to align with the IEEE systems engineering standard and scheduled for October 2019.

Note b: Defence advised the ANAO that, in adopting the IEEE systems engineering standard, the Preliminary Design Review is now known as the Systems Functional Review.

Source: Defence documentation.

3.3 Defence also developed an overall design and build schedule for the Future Submarine. Figure 3.1 illustrates the major design milestones in the context of the overall design and build schedule.

***Current status against major design milestones***

3.4 In its December 2018 report to the Negotiation Reference Committee (discussed in paragraph 2.15 above), Defence assessed that:

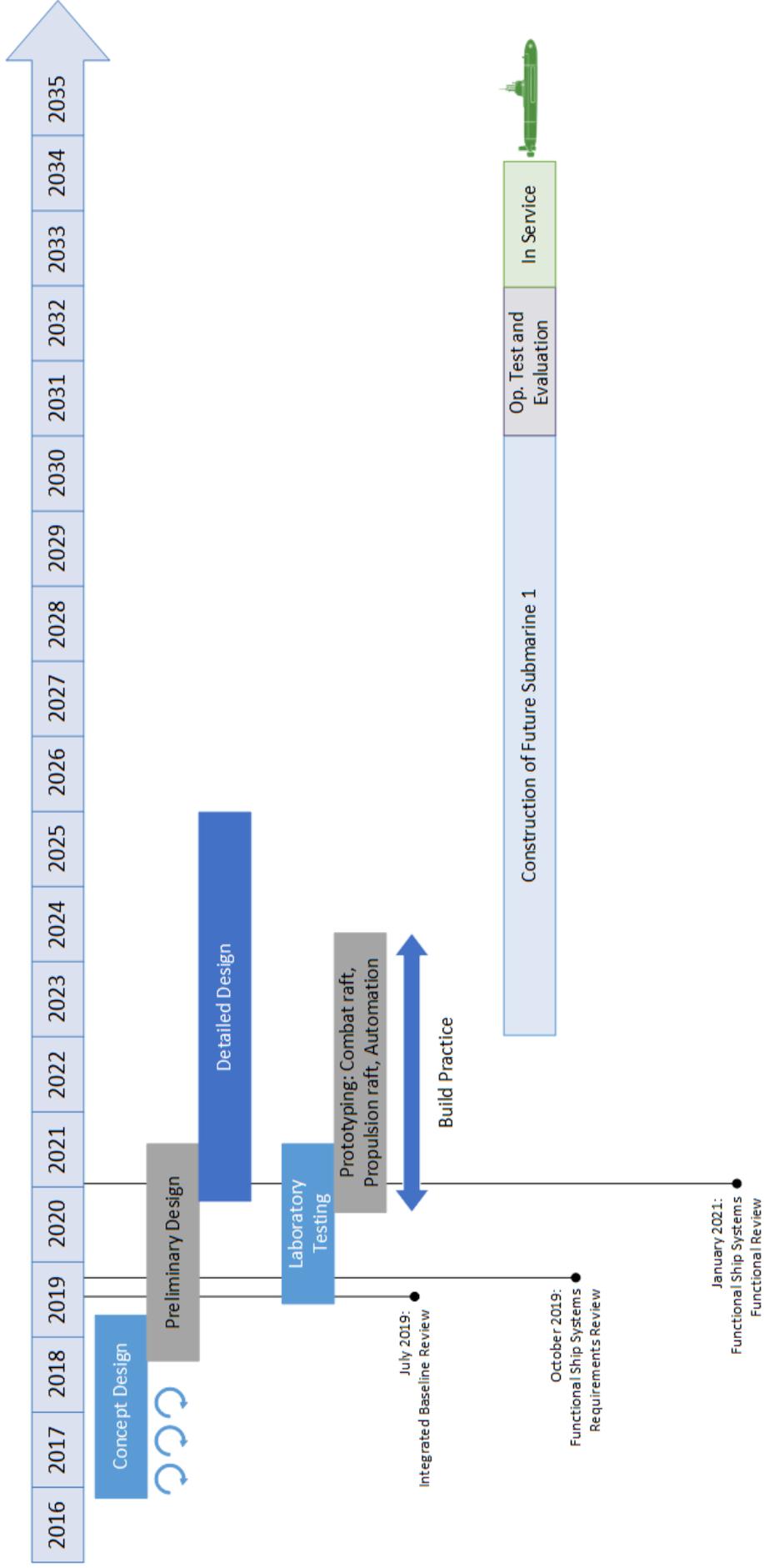
As challenging as construction will be (where 90% of the funding will be spent), success will be driven by preparations during the design of the Future Submarine, when much of the engineering effort will be required, supported by enabling disciplines including program management and procurement.

3.5 Defence advised government in February 2019 that Naval Group had proposed to extend the completion date for Future Submarine design work from July 2022 to September 2023 — some 15 months later than planned by Defence in its pre-design contract planning.<sup>41</sup> In its advice, Defence considered that investing in additional time to complete the design to an appropriate level of maturity would result in a stable design, lowering the risk of severe schedule or cost overruns during the construction phase of the program.<sup>42</sup> The effects of this proposed extension on the overall program schedule had not been assessed at the time Defence provided its advice to government.

41 Defence’s September 2017 Integrated Master Schedule outlined Defence’s pre-design contract estimates, which indicated that the Critical Design Review milestone was to commence by June 2022.

42 In discussion with the ANAO, Defence also highlighted that the mitigation of design risk was one of the key lessons learned from its experience in managing the Air Warfare Destroyer (AWD) project. Auditor-General Report No. 22 2013–14, *Air Warfare Destroyer Program*, identified significant immaturity in detailed design documentation, with design and construction issues leading to extensive, time-consuming and costly rework (p. 21).

**Figure 3.1: Current design and build schedule for the Future Submarine (as at 19 December 2019)**



Source: ANAO analysis of Defence documentation.

3.6 In its February 2019 advice to government, Defence acknowledged that the proposed time extension for design activity would add a further preliminary design stage to the Future Submarine Program. This approach was endorsed by the Naval Shipbuilding Advisory Board in February 2019.

3.7 In September 2019, Defence advised the ANAO that the design schedule for the Future Submarine Program had been extended by nine months against its pre-design contract estimates, not the 15 months proposed by Naval Group, and that ‘schedule pressure is acknowledged’:

The program is currently operating to a schedule 9 months behind the originally planned completion date for Definition Design.<sup>43</sup> This delay is intended to ensure the Commonwealth’s requirements for a high level of design maturity before progressing to subsequent phases of design, thereby reducing uncertainties during the build phase [and] the need for larger construction contingencies. Accordingly, Defence has not altered the planned delivery date for the first Attack class submarine.

3.8 The following sections examine whether the key contracted design milestones that were scheduled to be met by 31 October 2019 have been achieved. The design milestones examined by the ANAO were the:

- Concept Studies Review under the *Design and Mobilisation Contract*. This milestone marked the transition from the Preliminary Design: Feasibility Phase to the Preliminary Design: Definition Phase; and
- Systems Requirements Review under the *Submarine Design Contract*. This was the first design milestone within the Preliminary Design: Definition Phase, the first platform design review under the *Submarine Design Contract* and a milestone identified in the *Strategic Partnering Agreement* (see Table 3.1).

## Design and Mobilisation Contract

3.9 The *Design and Mobilisation Contract* has operated since 30 September 2016. The objectives of the contract were ‘to conduct early mobilisation activities and commence preliminary design studies for the delivery of the Future Submarine Program’.

3.10 Until the signing of the *Submarine Design Contract* on 1 March 2019, the *Design and Mobilisation Contract* was the primary contract for delivery of the Future Submarine Program’s milestones. In February 2019, Defence advised the Government that the contract’s purpose was to support the progression of design work and other work until the *Strategic Partnering Agreement* was completed and the *Submarine Design Contract* was executed.

3.11 The *Design and Mobilisation Contract* deliverables were to be achieved through seven streams of work covering three steps:

- Step 1 — Mobilisation and Preliminary Design Studies;
- Step 2 — Mobilisation and Functional Analysis; and
- Step 3 — Feasibility and Definition Studies.

3.12 The *Design and Mobilisation Contract* deliverables under the seven streams are illustrated in Figure 3.2. Streams 2–7 are ongoing and additional deliverables will be added under future contracts.

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43 ANAO comment: Appendix 2 of this audit report outlines the design phases for the Future Submarine.

**Figure 3.2: Design and Mobilisation Contract Stream of Activities**



Source: ANAO analysis of Defence documentation.

**Concept Studies Review — first design milestone**

3.13 The Concept Studies Review was to begin in September 2018. It was a significant design milestone of the *Design and Mobilisation Contract*, and the final review to be undertaken in the Future Submarine Program’s Preliminary Design: Feasibility Phase.<sup>44</sup> The Concept Studies Review marked the transition from the *Design and Mobilisation Contract* to the *Submarine Design Contract*.

3.14 In September 2018 Defence decided not to begin this scheduled mandated design review, on the grounds that the work provided to Defence by Naval Group did not meet Defence’s requirements. Naval Group had provided Defence with a suite of documents in July 2018, including proposed design changes to improve the performance of the Future Submarine. Defence’s review of this documentation found:

...the proposed design changes did not sufficiently account for impacts on operational requirements, design risk, costings or other transverse engineering consequences.

...a continuing lack of detailed information [as] required by the Commonwealth of Australia to assure design decision making.

3.15 In addition, Defence identified that 63 studies had not been completed by Naval Group, which were required to complete the Preliminary Design: Feasibility Phase of the Future Submarine Program.

3.16 Following an exchange of correspondence between Defence and Naval Group during August and September 2018, regarding Defence’s review findings and the implications for the Concept Studies Review, a ‘tripartite conference’ was held in September 2018 between Defence, Naval Group and the combat systems integrator, Lockheed Martin Australia. The conference resulted in the development of an agreed approach to address the technical issues identified by Defence.

3.17 On 23 November 2018, Defence wrote to Naval Group advising that in its opinion:

Following the activities over the last two months and the collaboration between Naval Group, the CSI [combat system integrator Lockheed Martin Australia] and the Commonwealth, the Commonwealth has now determined that the CSR [Concept Studies Review] Entry Criteria has

44 See Appendix 2.

been met. As a result, the Commonwealth and Naval Group can commence CSR in France on 28 November 2018.

3.18 Concept Studies Review activities were conducted between 28 November 2018 and 18 January 2019. On 12 February 2019, the Director-General Future Submarine Program advised Naval Group that it had met the criteria to exit the Concept Studies Review.

3.19 Defence prepared a *Design Assurance and Progress Report* for the Director-General Future Submarine Program in March 2019, which stated that:

To rectify the imbalances identified in the CSR [Concept Studies Review] deliverables, Naval Group, LMA [Lockheed Martin Australia], and CoA [Commonwealth of Australia] engaged collaboratively ... to achieve a balanced design, the key reason behind the failure to enter the CSR.

... Naval Group acknowledged the disconnect between the level of maturity they would expect at this stage of the design process and what the CoA was expecting. Through clear dialogue between the parties, Naval Group will now account for the more advanced design maturity expected of the CoA in the scope of planned work and in the delivery of milestone review documentation.

3.20 Following the Concept Studies Review, the Future Submarine Program transitioned from the Preliminary Design: Feasibility Phase to the Preliminary Design: Definition Phase.<sup>45</sup> In September 2019, Defence advised the ANAO that:

Reconciliation of the contracted submarine design work was completed under the Design and Mobilisation Contract as part of the Concept Studies Review, which included a formal review of the contracted checklist exit criteria to ensure successful completion and exit of the Concept Studies Review and the Feasibility Phase. This enabled the Future Submarine Program to progress from the Feasibility Phase of the Preliminary Design to the Definition Phase.

3.21 At the completion of the Concept Studies Review in February 2019, Defence identified a number of incomplete work items which it deemed 'not necessary to allow progression' from the Feasibility Phase of Preliminary Design to the Definition Phase. These incomplete work items included:

- 23 feasibility studies which were agreed by Defence and Naval Group as complete on 9 May 2019;
- 21 feasibility studies which were transferred to the *Submarine Design Contract*;
- a 'measurement plan' for the Future Submarine Program, incorporating key performance indicators, which was transferred to the *Submarine Design Contract*<sup>46</sup>; and
- an 'integrated master schedule' for the design and build of the Future Submarine which was transferred to the *Submarine Design Contract*.

## **Submarine Design Contract**

### *Transition to the Submarine Design Contract*

3.22 The delay in executing the *Submarine Design Contract* resulted in several contract amendments to continue work under the *Design and Mobilisation Contract*. Transition from the

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45 Appendix 2 of this audit report outlines the design phases for the Future Submarine.

46 The delivery of a 'measurement plan' was a pre-requisite to the signing of the *Submarine Design Contract*.

*Design and Mobilisation Contract* to the *Submarine Design Contract* was completed through the following contract amendments approved by the Director-General Future Submarine Program<sup>47</sup>:

- on 31 October 2018, the *Design and Mobilisation Contract* was extended to 30 November 2018 without any increase to its value;
- on 19 December 2018 the Director-General Future Submarine Program approved the further extension of the *Design and Mobilisation Contract* from 30 November 2018 to 31 December 2018. The contract value was increased by \$45,587,015 to \$383,474,193 to cover approved scope within approved program funding;
- on 20 December 2018, the Director-General Future Submarine Program approved the further extension of the *Design and Mobilisation Contract* from 31 December 2018 to 31 March 2019. The contract value was increased by \$62,610,300 to \$446,084,493 to cover approved scope within approved program funding;
- on 28 February 2019, the term of the *Design and Mobilisation Contract* was amended from 31 March 2019 to 28 February 2019 to align with the *Submarine Design Contract's* effective date of 1 March 2019. The value of the *Design and Mobilisation Contract* was reduced by \$21,804,752 to reflect this amendment; and
- on 6 August 2019, the *Design and Mobilisation Contract* was further amended to reflect the transfer of residual scope to the *Submarine Design Contract*. The value of the *Design and Mobilisation Contract* was reduced by \$18,001,002 to reflect this amendment.

3.23 On 1 March 2019, Defence and Naval Group signed the *Submarine Design Contract* which incorporated outstanding items under the *Design and Mobilisation Contract*. In September 2019, Defence advised the ANAO that:

The Design and Mobilisation Contract was structured to allow Program work to continue until the execution of the Submarine Design Contract. Incomplete work at the time of the signature of the Submarine Design Contract was progressively moved to the Submarine Design Contract. This has meant that the Design and Mobilisation Contract has remained open for a period of time following execution of the Submarine Design Contract.

### *Systems Requirements Review — first platform design review milestone*

3.24 Under the amended design schedule<sup>48</sup>, this Review was scheduled for completion by 31 October 2019. On 24 September 2019, Defence wrote to Naval Group noting that on entry to the *Submarine Design Contract*, the Commonwealth had agreed to extend the schedule for design of the Attack class submarine by nine months beyond the originally planned completion date, on the basis that it 'understood the need for a realistic and achievable schedule.' Defence also indicated that 'it is not evident Naval Group is prepared for entry to SRR [Systems Requirement Review]' and expressed a 'deepening concern over a number of matters' in the partnership, which in its view were a risk to the Future Submarine Program. Defence indicated that its view on these risks had been 'reinforced by the challenge of reaching SRR to schedule' and sought a high-level discussion on these matters with Naval Group before 2 October 2019.

47 The *Design and Mobilisation Contract* was structured to be delivered in three steps (see paragraph 3.11). For steps two and three, funding was provided through the use of 'Additional Supplies Orders' through Contract Change Proposals until the *Submarine Design Contract* was executed.

48 See paragraph 3.7.

3.25 In December 2019, Defence advised the ANAO that the Systems Requirements Review commenced on 5 December 2019, five weeks later than scheduled.

3.26 As discussed in paragraphs 2.13 and 2.22 of this audit report, the negotiation process for the *Strategic Partnering Agreement* had identified differences in the approaches of Defence and Naval Group on a range of issues, including commercial and engineering matters, which were considered by Defence to require ongoing attention and active management. In its 24 September 2019 correspondence to Naval Group, Defence noted that certain differences in approach:

... impact on our ability to maintain an already lengthened schedule for design and also exemplify some of the key Program risks that ... [Defence] highlighted to Government ahead of signature of the SPA [Strategic Partnering Agreement] in February [2019].

3.27 Defence documentation indicates that Defence's communications to date with Naval Group, on these and other issues such as the Concept Studies Review, have been frank and timely. This approach is consistent with expectations in clause 1.6.1 of the *Strategic Partnering Agreement* regarding 'open, honest and timely communication' between the parties. Defence documentation also indicates that the parties are addressing a wide range of complex issues, including the challenge of establishing an effective partnership and a mutual understanding on specific matters. While this is to be expected at this relatively early stage of a long-term partnership, the parties' active management of both specific issues and the relationship is essential, to ensure that avoidable risks to an already ambitious program schedule (which may also have cost and capability implications) do not arise. The ANAO's review indicates that while there is evidence of active contract management by Defence, it is too early to assess the success of the *Strategic Partnering Agreement* or the partnership between Defence and Naval Group.

### Has Defence's expenditure to date on design work been effective in achieving the Future Submarine Program's milestones?

The two key mandated design milestones — the Concept Studies Review and the Systems Requirements Review — were extended. As a result, Defence cannot demonstrate that its expenditure of \$396 million on design of the Future Submarine has been fully effective in achieving the program's two major design milestones to date. Defence expenditure on design work is a material component of the program, representing some 47 per cent of all program expenditure as at September 2019.

3.28 The 2016 Defence *Integrated Investment Program* allocated more than \$50 billion (out-turned) to the Future Submarine Program. Defence's cost modelling as at January 2019 estimates the total cost of the Future Submarine Program as \$51.7 billion (constant price). In September 2019, Defence advised the ANAO that:

Defence continues to track the cost estimate, which was updated to \$51.7 billion in January 2019. At this point this estimate still includes all contingency added in April 2016. Defence has also advised Government that the actual costs of the Attack class submarines will become more clearly defined during design, and will continue to be developed to remain within the overall program provision in the Defence Integrated Investment Program over the course of work under the Submarine Design Contract.

3.29 In November 2019, Defence advised the Senate that the acquisition cost of the Future Submarine was 'in the order of \$80 billion out-turned', with an estimated sustainment cost of \$145 billion out-turned to 2080.<sup>49</sup> Final program costs should be provided to the Government at second gate approval, prior to the commencement of construction of the first submarine.<sup>50</sup>

### Current cost status

3.30 As of 30 September 2019, Defence had spent \$834,891,390 on the Future Submarine Program, with \$396,068,415 (47 per cent) spent on design work. Table 3.2 identifies the distribution of these costs.

**Table 3.2: Distribution of costs for the Future Submarine Program as at 30 September 2019**

Vendor	Cost (\$m)	Percentage of total (%)
Naval Group Australia Pty Ltd	\$10,197,382	1%
Direct Contractors to Defence (<\$1 million each)	\$26,484,134	3%
Not assigned <sup>a</sup>	\$32,719,382	4%
ASC Pty Ltd	\$47,892,871	6%
Direct Contractors to Defence (>\$1 million each)	\$122,485,229	15%
Lockheed Martin Australia (Combat System)	\$148,743,080	18%
Naval Group (France)	\$446,369,312 <sup>b</sup>	53%
<b>Total</b>	<b>\$834,891,390<sup>c</sup></b>	<b>100%</b>

Note a: Defence advised the ANAO in September 2019 that 'the "not assigned" line item covers a range of other costs including travel, overseas post costs, defence purchasing card costs'.

Note b: Defence advised the ANAO in December 2019 that this figure includes \$89,918,354 paid to Naval Group Australia Pty Ltd via Naval Group (France).

Note c: The data in Table 3.2 is calculated on a cash basis, and may not align with the data in Defence's 2018–19 Annual Report which is calculated on an accrual basis.

Source: ANAO analysis of data drawn from the Defence BORIS finance system.

3.31 Payments to the prime contractors (Naval Group and Lockheed Martin Australia) represent the majority (72 per cent) of expenditure. Payments to other contractors represent 18 per cent of expenditure.<sup>51</sup> In approving the expenditure on contractors, Defence identified that:

49 Commonwealth, Senate Foreign Affairs, Defence and Trade Legislation Committee, 29 November 2019, evidence of Rear Admiral Gregory Sammut AO CSC RAN.

50 As noted in paragraph 1.21, the Future Submarine Program will be included in the ANAO's Major Projects Report from 2019–20. Auditor-General Report No. 39 2017–18, *Naval Construction Programs—Mobilisation* recommended:

That Defence, in line with a 2015 undertaking to the Government, determine the affordability of its 2017 *Naval Shipbuilding Plan* and related programs and advise the Government of the additional funding required to deliver these programs, or the Australian Defence Force capability trade-offs that may need to be considered.

Defence did not agree to this recommendation.

51 Defence currently employs approximately 130 contractors in mainly technical, engineering and program management roles within the Future Submarine Program.

There is a recognised shortage of these skills within the APS [Australian Public Service] and ADF [Australian Defence Force], and domestic and global supply markets are limited across the private sector. The Commonwealth must also compete for specialist resources with its International Partner and Combat System Integrator, and other Defence programs and their suppliers. It is in this context that the existing Seconded workforce and supporting arrangements have been developed.

3.32 The remaining 10 per cent of expenditure relates to: ASC Pty Ltd providing contracted support to the Future Submarine Program and the life-of-type extension activities for the Collins class submarine; and non-assigned costs. Table 3.3 identifies the costs associated with the Future Submarine Program, by category, from 1 July 2016 to 30 September 2019.

**Table 3.3: Future Submarine Program costs by category 1 June 2016 – 30 September 2019**

Item	Total
Weapons and deployable systems	\$1,264
Integrated Product Development and Support Environment	\$70,072
International Engagements	\$612,969
Integrated Logistic System Studies	\$1,022,636
Engineering	\$3,500,597
Engineering Studies	\$3,658,274
Support Systems	\$3,852,905
Foreign Military Services	\$4,187,014
Infrastructure	\$4,477,370
Posting Costs	\$8,888,306
Combat System Integration Facilities	\$11,607,450
Commercial Support	\$13,799,090
Program Office Costs	\$17,306,218
Overseas Office	\$21,365,022
Collins Life-of-Type	\$21,831,367
Program Workforce	\$48,395,598
Mobilisation	\$50,998,545
Platform System	\$73,571,123
Technical Support	\$75,915,266
Functional Analysis	\$129,161,840
Combat System Integration Mobilisation	\$147,333,012
Feasibility Studies	\$193,335,452
<b>Total</b>	<b>\$834,891,390</b>

Source: ANAO analysis of data drawn from the Defence BORIS finance system.

## Expenditure on design milestones

3.33 As noted in paragraph 3.30, \$396,068,415 (47 per cent of program expenditure) had been spent on design work as at 30 September 2019. This consists of \$129,161,840 spent on functional analysis; \$193,335,452 spent on feasibility studies; and \$73,571,123 on the platform system. Defence cannot demonstrate that its expenditure on design work (comprising some 47 per cent of expenditure as at 30 September 2019) has been fully effective in achieving the two key mandated design milestones to date — the Concept Studies Review and the Systems Requirements Review. As discussed earlier in this chapter:

- commencement of the Concept Studies Review was delayed from September 2018 to November 2018 and contracted work relating to the Review was incomplete at the conclusion of the Review in January 2019. Much of this work remains ongoing; and
- as at September 2019, Defence anticipated delays in starting the Systems Requirements Review originally scheduled to commence in October 2019 and had opened high-level discussions with Naval Group on delivery against that milestone. Defence advised the ANAO in December 2019 that the review commenced on 5 December 2019, five weeks later than scheduled.

## Has Defence identified, assessed and treated risk relating to the Future Submarine Program effectively?

Defence has adopted risk management methodologies to identify and assess program risk, and has adopted relevant risk mitigation strategies. Defence's overall assessment of risk for the Future Submarine Program is 'high' and Defence has informed the Government of its risk assessment and specific program risks. Establishing an effective long-term partnership between Defence and Naval Group is a key risk mitigation for the program. This relationship is at a relatively early stage and the parties' active management of both specific issues and the partnership is essential for effective risk management and program success.

Defence has identified that a delay in the Future Submarine Program of more than three years will create a gap in Navy's submarine capability. Defence's planning for a life-of-type extension for its Collins class submarines, to manage the risk of a capability gap, remains at an early stage.

## Defence's overall assessment of program risk

3.34 Auditor-General Report No. 39 2017–18 *Naval Construction Programs—Mobilisation* reported on Defence's advice to government highlighting the high to extreme risk that its naval construction programs carried at the time of that audit:

Defence first advised the Government in July 2015 that an Australian build of the Offshore Patrol Vessel, Future Frigate, and Future Submarine fleets carried 'extreme risk'. Prior to the release of the *Naval Shipbuilding Plan* in May 2017, Defence again advised the Government of the high to extreme risk of a concurrent Australian build strategy for the Offshore Patrol Vessel, Future Frigate and Future Submarine programs. Risks were identified in relation to capability, affordability under the assumptions of the *2016 Defence White Paper's Integrated Investment Program* and reform of the shipbuilding industrial base.<sup>52</sup>

52 Auditor-General Report No. 39 2017–18, *Naval Construction Programs—Mobilisation*, p. 44.

3.35 In evidence to the Senate in May 2018, Defence identified that the ‘extreme’ risk in its naval construction programs was focussed on the Future Frigate program:

Defence, not the ANAO, identified in early 2016 that some aspects of the Future Frigate program were of high to extreme risk levels. Since 2016 a number of mitigations have been put in place by government that have reduced the level of risk, whilst not eliminating all levels of risk, to a level which is manageable.<sup>53</sup>

3.36 Defence advised the Government in February 2019 that the Future Submarine Program risks remain ‘high’.

### *Managing the risk of a capability gap*

3.37 As mentioned in paragraph 1 of this report, the Future Submarine fleet is replacing Navy’s current fleet of six Collins class submarines. In October 2018, Defence internal advice identified that a delay to the Future Submarine Program of more than three years would lead to a capability gap for Navy. A key risk mitigation strategy — the Collins class life-of-type-extension program (SEA 1450) — is in its early stages and has yet to proceed through first gate approval.<sup>54</sup> The cost of the required upgrades to the Collins class, and the additional funding required to sustain the Collins’ extended life-of-type have not yet been determined. In December 2018, the Government’s Naval Shipbuilding Advisory Board<sup>55</sup> recommended to government that:

Given the significant delays to the [Future Submarine] program ... the Commonwealth should rebaseline its schedule and continue to develop alternative options to account for those delays. Acceleration of the planning for the Collins modernization and Life of Type Extension (LOTE) to provide additional capability to account for delays in Future Submarine is warranted.

3.38 In September 2019, Defence advised the ANAO that:

Defence has confirmed that life-of-type-extension as currently scheduled will deliver the service life extension required of the Collins fleet to avoid a capability gap. Life-of-type-extension planning will allow the first Collins submarine to undertake service life extension work when it enters a full cycle docking in 2026 (which is when such work would become due). Work is not required prior to this date, and the period to docking allows Defence and industry sufficient time to plan the life-of-type-extension work to the appropriate level of maturity. The same reasoning applies to the roll out of life-of-type-extension work across the Collins fleet.

3.39 To introduce efficiencies and manage risk in Navy’s transition from the Collins class to the Attack class, Defence is considering installing sub-systems and components in the upgraded Collins class that will be common to the Attack class. Defence expects that this approach will allow it to test these sub-systems, and enable Defence personnel to become familiar with these sub-systems before transitioning to the Attack class. The Government’s Naval Shipbuilding Advisory Board endorsed this approach in November 2018.

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53 Senate Foreign Affairs, Defence and Trade Legislation Committee, *Official Committee Hansard*, 29 May 2018, p. 14.

54 The risk of a capability gap has prompted a public debate on options and submissions to government on risk mitigation strategies, including the development of an evolved version of the Collins class. See for example, Submarines for Australia, media release, *Four Admirals write to the PM urging a new approach to the future submarine*, <http://www.submarinesforaustralia.com.au/2018/12/12/former-naval-officers-call-for-more-submarine-competition/> [accessed 10 October 2019].

55 The Naval Shipbuilding Advisory Board is discussed further in paragraph 2.7.

## Program risks and risk management

3.40 Defence has identified a range of specific program risks for the Future Submarine Program. Defence utilises a risk management tool, which includes a program risk register and risk schedules for each business unit within the Program. Each risk is allocated a unique identifier, owner, mitigation and rating.

3.41 The Naval Shipbuilding Advisory Board reviewed the Future Submarine Program's risk register in February 2019 which, in the board's view, was 'the most mature of all the [naval construction] programs'.

3.42 As discussed in paragraphs 2.22 and 2.23, Defence provided a summary of the Future Submarine Program's key risks to the Government in February 2019. To mitigate these risks, Defence has taken a number of steps including:

- mandating design and review points in the *Submarine Design Contract*;
- partnership and governance arrangements;
- transferring the Future Submarine's detailed design processes to Australia;
- the fabrication of complex hull parts of Future Submarine No.1 in France;
- productivity and cost control measures for the build phase; and
- oversight and review by the Naval Shipbuilding Advisory Board and Submarine Advisory Committee.<sup>56</sup>

3.43 Defence has indicated that many of the actions taken to mitigate program risks address lessons learned from Defence's previous naval construction programs including the Collins class submarine and Hobart class Guided Missile Destroyer (Air Warfare Destroyer). The actions taken to mitigate risks are discussed below.

### *Mandated design and review points*

3.44 The *Submarine Design Contract* includes a design schedule with design milestones known as Mandated System Reviews. Each review comprises entry and exit criteria (see Table 3.1 above). It is necessary for Naval Group to demonstrate that mandatory entry criteria have been met before the conduct of a Mandated System Review. Naval Group must also meet mandatory exit criteria before proceeding to the next phase. Defence advised the Government in February 2019 that these Reviews provide 'hold points' for assessing the Program's progress and risks.<sup>57</sup>

3.45 As discussed in paragraph 3.7, the overall design schedule has been extended by nine months against Defence's pre-design contract estimates. In December 2019, Defence advised the ANAO that the extension was intended to help retire design risk:

The difference between the estimated pre-contract schedule and the current contract schedule is to ensure design maturity meets the Commonwealth's expectations at the mandated design reviews, such as Systems Requirements Review and Systems Functional Review.

56 The Submarine Advisory Committee consists of three former senior Naval Officers from the United States Navy and the Royal Australian Navy, and provides Defence with a peer review of Navy's current and future submarine capability.

57 Auditor-General Report No. 22 2013–14, *Air Warfare Destroyer Program*, discussed the criticality of these design and review points (pp. 32–33).

The variance is intended to ensure the Commonwealth's requirements for a high level of design maturity before progressing to subsequent phases of design is achieved, thereby reducing costly uncertainties during the build phase and the need for larger construction contingencies.

These were major lessons learned out of the Collins and Air Warfare Destroyer programs.

3.46 At the time of this audit, it was too early to assess whether the anticipated benefits of the extension were likely to be realised.

### *Partnership and governance arrangements*

3.47 Establishing an effective long-term partnership between Defence and Naval Group is considered to be a key risk mitigation for the Future Submarine Program. The *Strategic Partnering Agreement* establishes the formal basis of a strategic partnership in which the parties are expected to contribute to the achievement of joint objectives 'through a culture of mutual respect and co-operation and in an environment that fosters innovation, continuous improvement, cost efficiency, transparency and open, honest and timely communication' (clause 1.6.1).

3.48 Defence has also negotiated a number of program governance controls within the *Strategic Partnering Agreement* governance framework which it can use to manage risk in relation to the Future Submarine Program (see Table 2.1, Goals 2 and 6).

3.49 The relationship between Defence and Naval Group is at a relatively early stage and the parties are addressing a wide range of complex issues, including the challenge of establishing an effective partnership and a mutual understanding on specific matters. For example, the ANAO's examination of the Concept Studies Review<sup>58</sup> and System Requirements Review<sup>59</sup>, above, referenced differing commercial and engineering approaches that Defence and Naval Group are working to resolve. The parties' active management of both specific issues and the relationship is essential to effective risk management and program success.

### *Transfer of the Future Submarine's detailed design to Australia*

3.50 During the mobilisation phase of the Future Submarine Program, Defence identified differing systems engineering and industrial engineering methodologies between France and Australia. In its project risk register, Defence proposed this issue as a risk to the Future Submarine Program and categorised its risk level as 'extreme'. Lessons learned from the Collins class submarine program identified that:

Often, a lead item would be built in another country and then production drawings would be provided to an Australian company to build the remaining items. Although, on the surface, this transfer of build processes should work, there were examples where the 'tribal knowledge' of the build procedures was not addressed solely by the construction drawings and plans.<sup>60</sup>

3.51 On 18 December 2018, Defence advised Naval Group that it will be transferring design activities for the Detailed Design Phase of the Future Submarine Program to Australia to establish:

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58 See paragraphs 3.13–3.21.

59 See paragraphs 3.24–3.27.

60 RAND National Defence Research Institute (2011): *Learning from Experience Volume IV, Lessons from Australia's Collins Submarine Program*, p.49. See also: Auditor-General Report No. 22 2013–14 *Air Warfare Destroyer Program*, pp. 209–212, which identified that the lack of integration between the design and build phases of the Air Warfare Destroyer program contributed to the delays experienced by that program.

... the sovereign design capability in Australia at the earliest opportunity and [offer] the greatest opportunity for the involvement of Australian industry. In addition, according to the Contractor's [Naval Group's] analysis, it is also the least expensive option for the program and therefore represents the best value for money for the Commonwealth.

3.52 The transfer of Detailed Design activities was included in the *Submarine Design Contract*. The issue was to be addressed at the Way Forward Review on 30 September 2019, and Naval Group was required to provide Defence with a 'Transfer of Technology Forward Options Report' regarding the transfer of detailed design activities by 12 July 2019. Defence advised the ANAO in September 2019 that the Way Forward Review had been delayed.

#### *Fabrication of complex hull parts for Future Submarine hull No.1 in France*

3.53 In November 2017, Defence identified that the fabrication of complex hull parts, requiring skilled personnel and sophisticated machinery, presented a risk to the program. To reduce this risk, in December 2018, the Head Future Submarine Program approved the fabrication of complex hull parts for Future Submarine hull No.1 to be undertaken in France, with fabrication for the remaining 11 submarine hulls to be undertaken in Australia. Internal Defence advice to the Head Future Submarine Program stated that the fabrication of complex hull parts for Submarine No.1 in France reduced risk by:

- a. providing sovereign capability to build complete submarines in the future by ensuring the specialised equipment and the skilled workforce is in place within the Australian Submarine Construction Yard,
- b. mitigating the risk to the build schedule for FSMOI [Future Submarine No.1] from any delay in the build schedule of the Australian shipyard by having the CHP [complex hull parts] for FSMOI [Future Submarine No.1] built in France, and
- c. more effectively managing the transfer of technology for the capability to build CHP [complex hull parts] to Australia by training the Australian workforce needed for subsequent submarines on FSMOI [Future Submarine No.1] in France.

#### *Productivity, cost-control and assurance measures*

3.54 Defence has recognised the risks of internal competition for skilled labour as a cost driver to its naval construction programs since 2015. It has continued to develop and assess options to achieve efficiencies in the detailed design and construction phases of the Future Submarine Program to mitigate the market effects on the cost of labour. Options include automation in the production phase.<sup>61</sup>

3.55 The *Strategic Partnering Agreement* contains a requirement for periodic cost reviews and reconciliation of agreed costs to provide assurance on the cost of the Program.

#### *Oversight and review arrangements*

3.56 In February 2019, Defence advised the Government that a key strategy to address the 'high' risk of the Future Submarine Program was ongoing review of the program by the Naval Shipbuilding Advisory Board<sup>62</sup> and the Submarine Advisory Committee. The Naval Shipbuilding Advisory Board has met at regular intervals since June 2017 to consider Defence's Naval Construction Programs,

61 Auditor-General Report No 39 2017-18, *Naval Construction Programs—Mobilisation*, p. 28, reported on a number of options then under consideration.

62 The Naval Shipbuilding Advisory Board is discussed in paragraph 2.7.

including the Future Submarine Program. Reports of the Board are provided to the Minister for Defence.

3.57 The Submarine Advisory Committee consists of three former senior officers of the United States Navy and Royal Australian Navy. The Committee's Terms of Reference state that it is to provide:

... Defence with independent critical peer review of the current and projected submarine capability to validate existing plans and actions as well as to enable early identification of areas of weakness.

3.58 Defence advised the ANAO that it provides submissions to the Submarine Advisory Committee if and when needed. Defence provided submissions to this Committee during 2017 and up until July 2018.

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Grant Hehir  
Auditor-General

Canberra ACT  
14 January 2020

# Appendices

## Appendix 1 Department of Defence's response



**Australian Government**

**Department of Defence**

**PO Box 7900 CANBERRA BC ACT 2610**

EC19-006508

**Mr Grant Hehir**  
Auditor-General  
PO BOX 707  
CANBERRA ACT 2601

Dear Mr Hehir

**Australian National Audit Office Section 19 Proposed Report: *Future Submarines – Transition to Design***

Thank you for your correspondence of 14 November 2019, containing the Section 19 Proposed Report for the ANAO performance audit *Future Submarines – Transition to Design*. Defence appreciates the opportunity to review and comment on the Proposed Report.

As reflected in Defence's Summary Response to the audit report, Defence acknowledges the findings contained in the ANAO audit report, *Future Submarines – Transition to Design*.

Having established a fit-for-purpose strategic partnership framework through the Strategic Partnering Agreement, which addresses the Government's objectives for the Future Submarine Program, Defence has remained focused on thorough execution of the design phase of the Program and preparations for construction.

The first major milestone, Concept Studies Review, was exited under the Design and Mobilisation Contract within the resources allocated to that stage of design, acknowledging entry to this review occurred later than planned. Lessons from this review highlighted the need to allow additional time for Naval Group to meet Defence's requirements for a high level of design maturity before progressing to subsequent phases of the design, thereby reducing costly uncertainties during the build phase and the need for larger construction contingencies. These were major lessons learned from the Collins and Air Warfare Destroyer Programs.

An extended schedule for remaining design work has been implemented under the Submarine Design Contract – the first program contract to be executed under the Strategic Partnering Agreement. Design work has continued to progress to the required level of maturity under the Submarine Design Contract within allocated resources as demonstrated by entry to the second major milestone, Systems Requirements Review on 5 December 2019. The five-week delay to entry is assessed as recoverable by the next major milestone, Systems Functional Review, scheduled January 2021.

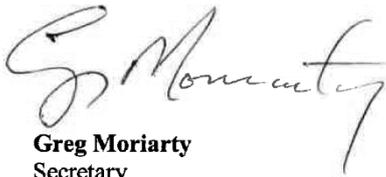
Importantly, the commencement of construction activities in Australia, and the delivery of the Future Submarines has not been delayed.

Attached to this letter are Defence's Proposed Amendments, Editorials and Comments (Annex A), Defence's Response to Requests for Information (Annex B), Defence's Response to the Proposed Recommendation (Annex C), and the Defence Summary Response (Annex D). These constitute Defence's formal response to the Section 19 Proposed Report.

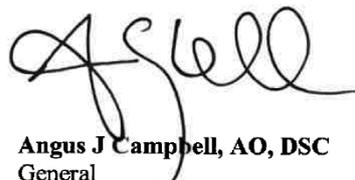
Our point of contact is ANAO Liaison Officer, Miss Alaina Garcia, who can be contacted by telephone on 02 6266 3103 or email: [alaina.garcia@defence.gov.au](mailto:alaina.garcia@defence.gov.au).

Defence appreciates the constructive engagement of the ANAO audit team throughout the conduct of this performance audit and remains committed to assisting you with its successful completion. We look forward to the upcoming tabling of the Final Report.

Yours sincerely



**Greg Moriarty**  
Secretary



**Angus J Campbell, AO, DSC**  
General  
Chief of the Defence Force

13 December 2019

13 December 2019

Annexes:

- A) Defence's Proposed Amendments, Editorials and Comments
- B) Defence's Response to Requests for Information
- C) Defence Summary Response

## Appendix 2 Design phases for the Future Submarine Program

### Designing the Future Submarine

Table A.1 outlines the design and build phases of the Future Submarine Program.

As at December 2019, the program was in the ‘Preliminary Design Definition’ phase. Through the Preliminary Design stage and the Design Development stage, Defence aims to elicit and assess a full design for the Future Submarine and identify firm costs and schedule data.

**Table A.1: Phases of the Future Submarine Program**

	Phase	Purpose
<b>Preliminary Design</b>	Feasibility Studies	Develop feasible concept design for the Future Submarine, capable of meeting key capability requirements.
	Definition Phase	Develop concept to next level of detail, procuring critical systems for test (e.g. main motor, diesel generators).
<b>Design Development</b>	Basic Design	Detailed architecture for the hull structure and internal systems, including the placement of main systems. The functions and performance of the first batch of the Future Submarine will not change from completion of Basic Design.
	Detailed/Production Design	Integrating each zone in the Future Submarine to form detailed drawings for the whole submarine and developing the work instructions to build the submarine. Specify trials for the submarine and its systems.
<b>Construction</b>	Production	Build the first Future Submarine, checking and validating build against the design, including setting systems to work.

Source: Department of Defence.

## Appendix 3 Negotiation dates for the Strategic Partnering Agreement

**Table A.2: Negotiation dates for the Strategic Partnering Agreement**

Negotiation session	Dates
1	6-17 November 2017 (10 working days)
2	4-15 December 2017 (10 working days)
3	15-25 January 2018 (9 working days)
4	5-16 February 2018 (10 working days)
5	5-9 March 2018 (5 working days)
6	26-29 March 2018 (4 working days)
7	24-27 April 2018 (4 working days)
8	21 May-1 June 2018 (10 working days)
9	25 June-6 July 2018 (10 working days)
10	23 July-3 August 2018 (10 working days)
11	3-14 September 2018 (10 working days)
12	8-25 October 2018 (12 working days)

Source: ANAO analysis of Defence documentation.