

## Project Data Summary Sheet<sup>152</sup>

Project Number	LAND19 Phase 7B
Project Name	SHORT RANGE GROUND BASED AIR DEFENCE
First Year Reported in the MPR	2020-21
Capability Type	Replacement
Capability Manager	Chief of Army
Government 1st Pass Approval	Feb 17
Government 2nd Pass Approval	Feb 19
Budget at 2nd Pass Approval	\$1,274.3m
Total Approved Budget (Current)	\$1,216.3m
2021-22 Budget	\$144.2m
Complexity	ACAT II



### Section 1 – Project Summary

#### 1.1 Project Description

LAND19 Phase 7B Short Range Ground Based Air Defence (SRGBAD) Project will introduce into service the Army-operated component of the Integrated Air and Missile Defence (IAMD) capability to achieve an enhanced Ground-Based Force Protection system. The primary objectives of the project are to deliver a scalable SRGBAD capability that can sense, warn, manage and counter weapons and sensor effects of fixed and rotary wing platforms, unmanned aerial systems (UAS), stand-off weapons, Rocket Artillery Mortar (RAM) and missiles within the required environments. The capability being acquired is an enhanced version of the jointly developed Raytheon-Kongsberg National Advanced Surface to Air Missile System (NASAMS), which is currently in-service with a number of nations. The capability is being acquired through a contract with Raytheon Australia. Two NASAMS Batteries are being acquired, each consisting of three Fire Units, with additional sub-systems for training purposes. A single Fire Unit consists of missile launchers, sensors, and a command & control centre, and is capable of protecting a specified area from a range of airborne threats. A single battery is capable of meeting the operational requirements, with the second battery being used for training purposes.

#### 1.2 Current Status

**Cost Performance**

In-year

As at 30 June 2022, financial year 2021-22 expenditure was \$183.8m against a budget of \$144.2m. The EOFY variance of \$39.6m is primarily due to an early achievement of Raytheon Contract milestones.

Project Financial Assurance Statement

As at 30 June 2022, project LAND19 Phase 7B has reviewed the approved scope and budget for those elements required to be delivered by Defence. Having reviewed the current financial and contractual obligations of Defence, current known risks and estimated future expenditure, Defence considers, as at the reporting date, there is sufficient budget including contingency remaining for the project to complete against the agreed scope.

Contingency Statement

The project has applied for contingency funds in the financial year, primarily for the treatment of project delays due to COVID-related impacts, as identified in the Issues at Section 5.

**Schedule Performance**

The project completed the design phase for NASAMS during 2020, with successful completion of the Detailed Design Review on schedule in December 2020. During 2021, manufacture of the first radar and canister launcher systems was completed, with additional systems and test events scheduled for completion throughout 2022 and early 2023. The CEA Detailed Design Review was also completed in August 2021. There have been delays in the provision of some items of Government Furnished Materiel (GFM) to Raytheon Australia, primarily due to longer than anticipated export approvals. Despite mitigation strategies, these delays created a risk of future schedule delays and associated cost increases. COVID-19 has had a significant impact on the project. The international travel restrictions in place between industry partners in Australia, Norway and the US have prevented effective collaboration, integration and test activities throughout 2020 and into 2021. When combined with GFM delays, this has transferred technical risk to later parts of the project, compressing planned activities and increasing the likelihood of rework. Workforce quarantine measures have led to delays in manufacturing, particularly for Canberra-based industry in late 2021. Defence has agreed to revise some contract milestones accordingly, to provide schedule relief to industry.

#### 152 Notice to reader

Forecast dates and Sections: 1.2 (Materiel Capability/Scope Delivery Performance), 1.3 (Major Risks and Issues), 4.1 (Measures of Materiel Capability/Scope Delivery Performance), and 5 (Major Risks and Issues) are excluded from the scope of the ANAO's review of this Project Data Summary Sheet. Information on the scope of the review is provided in the *Independent Assurance Report by the Auditor-General* in Part 3 of this report.

In October 2021, the project assessed the original Initial Materiel Release (IMR) date in light of the cumulative impact of the above delays, and determined a revised date. The Initial Operating Capability (IOC) was subsequently revised. These changes were advised to Government in the first quarter 2022 Bi-annual Update, and captured in a revised Materiel Acquisition Agreement. The Final Operating Capability (FOC) remains on schedule, despite the delay to IOC.

**Materiel Capability/Scope Delivery Performance**

The project is on track to deliver against all agreed capability outcomes for the Final Operating Capability.

**Note**

Forecast dates and capability assessments are excluded from the scope of the Auditor-General's Independent Assurance Report.

1.3 Project Context

**Background**

LAND19 Phase 7B was one of the first projects to be considered under the new Capability Life Cycle, and the Smart Buyer framework was still being defined at this time. The project participated in a pilot Smart Buyer workshop, and the principles identified in this were applied as part of the First Pass Approval process. This workshop identified risk in financial, requirements, integration, and schedule components of the project. These risks were subsequently considered as part of the project's acquisition strategy, and addressed in the Risk Mitigation Activity (RMA) between First Pass and Second Pass.

The project received First Pass Approval from Government in February 2017. This approval included release of a Single Supplier Limited Tender to Raytheon Australia as Prime Systems Integrator (PSI) for the acquisition and sustainment of the SRGBAD capability, as well as for the conduct of a RMA between First Pass and Second Pass to reduce technical risks associated with system integration and assess the environmental durability of key sub-systems. This approval also included direction to investigate the Canberra-based company CEA Technologies' (CEA) sensors for use in a ground-based air defence environment between First Pass and Second Pass.

The preferred capability option presented at Second Pass was based on the NASAMS baseline but with significant enhancements. This option provided an enhanced capability, addressed obsolescence risks, provided greater Australian industry content, and as a result was assessed as being better value for money. This option was approved by Government in February 2019. The following major procurement activities have since occurred:

- Contract signature was achieved with Raytheon Australia as PSI in June 2019;
- Contract signature was achieved with CEA Technologies for the provision of operational and tactical radars in November 2019;
- The Foreign Military Sales (FMS) offer for the purchase of missiles was accepted by the Commonwealth in March 2020;
- Contract signature was achieved with Raytheon Australia as the Support Contractor in December 2020

**Uniqueness**

NASAMS is an established and mature ground based air defence capability, however under LAND19 Phase 7B, Defence is undertaking a number of enhancements, which make it unique. The most significant of these is replacing the standard NASAMS radar with radars from Australian company CEA Technologies. Other modifications, which are not common across the international user base, include integration with Army in-service vehicles and radios and interfacing with existing Land and Joint information networks.

**Major Risks and Issues**

The project is currently managing the following major risks:

- Integration and test activities delayed due to Government-supplied systems, resulting in increased technical risk, with potential cost increases and delays to IOC;
- Longer than planned development and testing of system interfaces, leading to delays to IOC;
- A heavily constrained operational test and evaluation timeline (this risk is now low, as noted in Section 5)

The project is currently managing the following issue:

- There is a chance that COVID-19 impacts (including international travel restrictions) will continue to prevent effective collaboration between subcontractors, resulting in delays to critical integration and test events. Note that a delay to IOC has already eventuated, and the project schedule has been adjusted accordingly. The risk of further delays to IOC due to COVID still exists, but is now assessed as low.

**Other Current Related Projects/Phases**

LAND121 Phase 4 will acquire and deliver into service Protected Mobility Vehicles – Light (PMV-L) and companion trailers for command, liaison, reconnaissance and utility roles; and the associated training and support systems. Elements of LAND19 Phase 7B tactical radar and high mobility launcher system being acquired for this capability will be integrated onto the Hawkei mission system.

**Note**

Major risks and issues are excluded from the scope of the Auditor-General's Independent Assurance Report.

Section 2 – Financial Performance

2.1 Project Budget (out-turned) and Expenditure History

Date	Description	\$m	Notes
<b>Project Budget</b>			
May 17	Original Approval (Government First Pass Approval)	25.9	
Jun 19	Government Second Pass Approval	1,248.4	
	<b>Total at Second Pass Approval</b>	<b>1,274.3</b>	
Jun 22	Exchange Variation	(58.0)	
Jun 22	<b>Total Budget</b>	<b>1,216.3</b>	
<b>Project Expenditure</b>			
Prior to Jul 21	Contract Expenditure – Raytheon Australia	322.0	
	Contract Expenditure – CEA Technologies	113.3	
	Contract Expenditure – US Government (AT-D-YAI)		
	Other Contract Payments / Internal Expenses	12.9	1, 2
		448.2	

**Project Data Summary Sheets**

Auditor-General Report No.12 2022–23  
2021–22 Major Projects Report

FY to Jun 22	Contract Expenditure – Raytheon Australia Contract Expenditure – CEA Technologies Contract Expenditure – US Government (AT-D-YAI) Other Contract Payments / Internal Expenses	154.2 21.9	
Jun 22	<b>Total Expenditure</b>	7.6	183.8 631.9
Jun 22	<b>Remaining Budget</b>		584.4

## Notes

1	Price and expenditure related to missile procurement is classified. This expenditure has been reported as part of Other Contract Payments / Expenses.
2	Other Contracts Payments/Internal Expenses comprises: Risk Mitigation Activities, operating expenditure, contractors, consultants, and other capital expenditure not attributable to the aforementioned contracts

## 2.2A In-year Budget Estimate Variance

Estimate PBS \$m	Estimate PAES \$m	Estimate Final Plan \$m	Explanation of Material Movements
162.4	143.1	144.2	PBS-PAES: The variation is primarily due to delays in the manufacture of the CEA radars, foreign exchange variation and the reprogramming of minor project activities.  PAES-Final Plan: Forecast expenditure is in line with the 2021-22 PAES with only minor variation due to Global Price Update (FOREX rate changes).
Variance \$m	(19.3)	1.1	Total Variance (\$m): (18.2)
Variance %	(11.9)	0.8	Total Variance (%): (11.2)

## 2.2B In-year Budget/Expenditure Variance

Estimate Final Plan \$m	Actual \$m	Variance \$m	Variance Factor	Explanation
		39.6	Australian Industry	The variance of \$39.6m is predominately due to an early achievement of Raytheon Contract milestones valued at \$42m which was phased in July 2022, and this was offset mainly by delays in the manufacture and assembly of CEA radars.
		-	Foreign Industry	
		-	Early Processes	
		-	Defence Processes	
		-	Foreign Government Negotiations/Payments	
		-	Cost Saving	
		-	Effort in Support of Operations	
		-	Additional Government Approvals	
144.2	183.8	39.6	<b>Total Variance</b>	
		27.5	<b>% Variance</b>	

## 2.3 Details of Project Major Contracts

Contractor	Signature Date	Price at		Type (Price Basis)	Form of Contract	Notes
		Signature \$m	30 Jun 22 \$m			
Raytheon Australia	Jun 19	680.1	724.0	Fixed Price	Standard Defence Contract	1
CEA Technologies	Nov 19	137.1	153.2	Fixed Price	Standard Defence Contract	2
US Government (AT-D-YAI)	Mar 20	-	-	Reimbursement	FMS	3

## Notes

1	Raytheon contract value as at 30 June 2022 is based on actual expenditure and remaining commitment, and includes adjustments for indexation (where applicable). The price increase since contract signature is primarily due to indexation and foreign exchange rate variation (\$43.9m), and also includes an \$8m increase due to project delays, as noted in Section 5.
2	CEA contract value as at 30 June 2022 is based on actual expenditure and remaining commitment, and includes adjustments for indexation (where applicable). The price increase since contract signature is primarily due to indexation and foreign exchange rate variation.
3	Pricing related to missile procurement is classified.

Contractor	Contracted Quantities as at		Scope	Notes
	Signature	30 Jun 22		
Raytheon Australia	7	7	NASAMS Fire Units plus training equipment	
CEA Technologies	Tactical Radars Operational Radars	Tactical Radars Operational Radars	Radars plus training and support equipment	
US Government	Classified	Classified	Missiles	
<b>Major equipment accepted and quantities to 30 Jun 22</b>				
Nil				

### Section 3 – Schedule Performance

#### 3.1 Design Review Progress

Review	Major System/Platform Variant	Original Planned	Current Contracted	Achieved/Forecast	Variance (Months)	Notes
System Requirements	NASAMS	Oct 19	N/A	Oct 19	0	
	CEA Radars	Apr 20	N/A	Apr 20	0	
Preliminary Design	NASAMS	May 20	N/A	May 20	0	1
Detailed Design	NASAMS	Dec 20	N/A	Dec 20	0	
	CEA Radars	Jul 21	N/A	Aug 21	1	
<b>Notes</b>						
1 Preliminary Design aspects for CEA Radars were covered in the NASAMS PDR.						

#### 3.2 Contractor Test and Evaluation Progress

Test and Evaluation	Major System/Platform Variant	Original Planned	Current Contracted	Achieved/Forecast	Variance (Months)	Notes
System Integration	First of Type (FoT) Canister Launcher Factory Acceptance Test (FAT)	Jan 22	Nov 21	Nov 21	(2)	1
	FoT Fire Distribution Centre FAT	Apr 22	Aug 22	Aug 22	4	2
	Flight Trial	Jun 22	Apr 23	Apr 23	10	2
Acceptance (NASAMS Fire Units)	Fire Unit 1 (first)	Mar 23	Delayed	Delayed	NFP	2, 3
	Fire Unit 7 (final)	May 24	N/A	May 24	0	
Acceptance (CEA Radars)	Tactical Radar (first)	Mar 23	N/A	Mar 23	0	
	Tactical Radar (final)	Jun 24	N/A	Jun 24	0	
	Operational Radar (first)	Mar 23	N/A	Mar 23	0	
	Operational Radar (final)	Apr 24	N/A	Apr 24	0	
<b>Notes</b>						
1 This milestone was achieved early because the exit criteria was modified to allow completion in Norway, with subsequent shipment to Australia. This shipment commenced in April 2022.						
2 This milestone was adjusted as a result of COVID-related delays, including workforce quarantine measures and travel restrictions, as noted in the issues in Section 5.						
3 Fire Unit composition varies per Fire Unit (i.e. number and type of launchers and other major systems).						

#### 3.3 Progress Toward Materiel Release and Operational Capability Milestones

Item	Original Planned	Achieved/Forecast	Variance (Months)	Notes
Initial Materiel Release (IMR)	May 23	Delayed	NFP	1
Initial Operational Capability (IOC)	Jun 23	Delayed	NFP	1
Final Materiel Release (FMR)	Sep 25	Sep 25	0	
Final Operational Capability (FOC)	Jun 26	Jun 26	0	
<b>Notes</b>				
1 COVID-19 has had a significant impact on the project, including international travel restrictions, GFM delays, and workforce quarantine measures. In October 2021, the project assessed the original Initial Materiel Release (IMR) date in light of the cumulative impact of the above delays, and determined a revised date. The Initial Operating Capability (IOC) was subsequently revised.				

Schedule Status at 30 June 2022



<b>Note</b>
Forecast dates in Section 3 are excluded from the scope of the Auditor-General's Independent Assurance Report.



### Section 4 – Materiel Capability/Scope Delivery Performance

#### 4.1 Measures of Materiel Capability/Scope Delivery Performance

Traffic Light Diagram: Percentage Breakdown of Materiel Capability/Scope Delivery Performance	
	<b>Green:</b> The project expects to meet capability requirements as expressed in the Materiel Acquisition Agreement.

### Project Data Summary Sheets

Auditor-General Report No.12 2022–23  
2021–22 Major Projects Report

	<b>Amber: N/A</b>
	<b>Red: N/A</b>

**Note**

This Traffic Light Diagram represents Defence's expected capability delivery. Capability assessments and forecast dates are excluded from the scope of the Auditor-General's Independent Assurance Report.

**4.2 Constitution of Materiel Release and Operational Capability Milestones**

Item	Explanation	Achievement
Initial Materiel Release (IMR)	<ul style="list-style-type: none"> <li>• Fire Unit with Tactical Radar</li> <li>• Classroom Trainer installed</li> <li>• Basic Support Equipment</li> <li>• Initial Spares</li> <li>• Systems accepted and certified</li> <li>• Support Contract in operation</li> </ul>	Not yet achieved
Initial Operational Capability (IOC)	<ul style="list-style-type: none"> <li>• One operationally deployable Fire Unit</li> <li>• Vehicles to support Fire Unit</li> <li>• Operator and maintainer training</li> <li>• Completion of Operational Test &amp; Evaluation</li> </ul>	Not yet achieved
Final Materiel Release (FMR)	<ul style="list-style-type: none"> <li>• All Fire Units</li> <li>• All Radars</li> <li>• All spares and support equipment</li> </ul> <p>FMR is expected to be achieved in September 2025.</p>	Not yet achieved
Final Operational Capability (FOC)	<ul style="list-style-type: none"> <li>• Complete mission system comprising all materiel elements defined in IMR and FMR</li> <li>• Doctrine published</li> <li>• All certification and accreditation complete</li> <li>• Facilities complete</li> </ul> <p>FOC is expected to be achieved in June 2026.</p>	Not yet achieved

**Section 5 – Major Risks and Issues**

**5.1 Major Project Risks**

Identified Risks (risk identified by standard project risk management processes)	
Description	Remedial Action
<p>There is a chance that there will be insufficient time for Army to conduct Operational Test and Evaluation (OT&amp;E), following acceptance of equipment, and completion of initial training.</p> <p>Noting the complex introduction into service for this capability, and potential for corrective actions following acceptance testing, there is insufficient time in this schedule.</p>	<p>The IOC footprint is the minimum for an effective operational capability, to allow for a scaled introduction into service through to FOC.</p> <p>A number of opportunities have been identified to increase Army involvement in activities leading up to introduction into service, thereby reducing the emphasis on the final OT&amp;E.</p> <p>Further detailed planning on OT&amp;E will confirm opportunities such as placement of Army personnel in the Raytheon team, Army participation in acceptance testing, and combining training exercises with OT&amp;E.</p> <p>IOC has now been delayed, which has created more time to conduct OT&amp;E. This risk remains, but is now assessed as low.</p>
Emergent Risks (risk not previously identified but has emerged during 2021–22)	
Description	Remedial Action
<p>There is a chance that delays to provision of Government-supplied systems will lead to integration and testing delays, with potential cost increases and delays to IOC.</p>	<p>The timely provision of these systems is required as early as possible in the testing phase, to ensure that technical risk is not transferred to later stages. A temporary loan of equipment has been requested for integration testing which, if approved, will mitigate this risk.</p> <p>Additional integration testing is occurring on legacy equipment, which will enable early testing of a significant amount of functionality.</p>
<p>There is a chance that the development and testing of the system interfaces will take longer than planned, impacting other system level tests, and leading to IOC delays.</p>	<p>System interface testing is prioritising critical functionality, which has the greatest potential to impact subsequent testing stages.</p> <p>Industry capacity is being managed through appropriate governance arrangements, to ensure that prioritisation is effectively implemented.</p>

**5.2 Major Project Issues**

Description	Remedial Action
There is a chance that COVID-19 impacts (including	Some critical integration and test activities have been able to be

international travel restrictions) will continue to prevent effective collaboration between subcontractors, resulting in delays to critical integration and test events. This will increase the technical risk during acceptance testing and compress the schedule, leading to an increased risk of defects and schedule delays in the lead-up to IOC.	conducted remotely over networks, and this will continue. International travel (with quarantine at each end) has occurred for certain integration activities, however this is not always possible or practical (and varies with each country/state's COVID situation). Some resequencing of the schedule is occurring, including reduced review times for contract deliverables. Air freight in lieu of sea freight is also under consideration. Note that a delay to IOC has already eventuated, and the project schedule has been adjusted accordingly. The risk of further delays to IOC due to COVID still exists, but is now assessed as low.
---	---

<b>Note</b>
Major risks and issues in Section 5 are excluded from the scope of the Auditor-General's Independent Assurance Report.

## Section 6 – Lessons Learned

### 6.1 Key Lessons Learned

Description	Categories of Systemic Lessons
<p>The COVID shutdown provided an opportunity to improve the use of ICT collaboration tools. This has seen an increase in productivity and reduced reliance on travel. However, there are still limitations in what can be achieved between Defence systems and industry systems, primarily due to security and accreditation issues.</p> <p>The project team is now able to work collaboratively from multiple remote locations. This would be further improved by extending ICT collaboration tools to our industry partners. While this presents significant security accreditation issues to resolve, an investment now would yield much improved collaboration in future.</p> <p>Plan for future ICT collaboration tools to be extended to trusted industry partners.</p>	Resourcing
<p>Mandated System Reviews (MSRs) in large projects can cover many complex issues, over several days. They require review of large amounts of data in advance. Lead-in reviews are a great way to focus attention of relevant stakeholders on particular issues. They can be conducted months in advance of the MSR.</p> <p>A lead-in review is a separate meeting or workshop held to discuss a particular MSR agenda item. They can often be used to gain concurrence on a particular issue, thereby saving time in the MSR, and giving stakeholders a chance to consider. They also help focus reviewers on key issues prior to the MSR.</p> <p>Conduct lead-in reviews as a standard part of preparation for large MSRs.</p>	Contract Management
<p>Risk Mitigation or Risk Reduction activities are often completed during First Pass to Second Pass, usually to investigate technical feasibility or capability definition. Extending these activities to include formal requirements development and system definition can place the project in a much more mature state at Contract Signature.</p> <p>Contracts can sometimes be established with immature requirements, and requirements definition completed post effective-date may result in cost, schedule or capability adjustments post-Second Pass. By focusing on system specification refinement between First Pass to Second Pass, this risk can be mitigated.</p> <p>Include formal and funded system definition activities between First Pass to Second Pass.</p>	Requirements Management
<p>As widely recognised, with minimal warning COVID measures ceased planned domestic and international travel to enable design, collaboration and integration outcomes which drove all projects to adapt process and procedures. Key observations include:</p> <ul style="list-style-type: none"> <li>- Defence efforts to adapt and introduce remote working practices and tools through 2020/21 were significant enablers.</li> <li>- Some physical collaboration remained essential with Norway and US, particularly complex engineering and integration tasks. Defence endorsement of Essential International Travel was critical, with travel able to be justified in a limited number of cases to enable progress.</li> <li>- Regular collaboration with wider project team and industry, as well as project team internal, were both of equal importance to maintain situational awareness, individual welfare, design priorities, and travel planning.</li> <li>- Remote working and collaboration tools remain important despite AUS transition to a COVID Normal setting in 2022. Regular sync meetings are still conducted online as they enable a much wider participation which is not limited by physical space or travel constraints.</li> <li>- For complex issues requiring input across a diverse range of stakeholders to drive key decisions, physical meetings remain the preference.</li> </ul> <p>CASG should conduct ongoing review of COVID work practices in order to incorporate strong lessons and capabilities developed through 2020 - 2022.</p>	Resourcing

## Section 7 – Project Structure

### 7.1 Project Structure as at 30 June 2022

Unit	Name
Division	Land Systems Division
Branch	Land Manoeuvre Systems Branch

## Project Data Summary Sheets

Auditor-General Report No.12 2022–23  
2021–22 Major Projects Report