Project Data Summary Sheet[1]

Project Number	**AIR2025 Phase 6**
Project Name	**JINDALEE OPERATIONAL RADAR NETWORK (JORN) MID-LIFE UPGRADE**
First Year Reported in the MPR	2020-21
Capability Type	Upgrade
Capability Manager	Chief of Air Force
Government 1st Pass Approval	Dec 15
Government 2nd Pass Approval	Dec 17
Budget at 2nd Pass Approval	$1,117.9m
Total Approved Budget (Current)	$1,288.0m
2022–23 Budget	$105.4m
Complexity	ACAT II

Section 1 – Project Summary

1.1 Project Description

The Jindalee Operational Radar Network (JORN) is a long-range over-the-horizon radar that supports the Australian Defence Force's (ADF) air and maritime operations, strategic surveillance and search and rescue operations. Project AIR2025 Phase 6 delivers a major mid-life redesign and upgrade by modernising JORN, including the command and control system operated from the Battlespace Surveillance Centre at Royal Australian Air Force (RAAF) Base Edinburgh and the three radar sites located at Longreach in Queensland, Laverton in Western Australia and Alice Springs in the Northern Territory. Other vital supporting infrastructure including the extensive Ionospheric sounder network will also be upgraded.

The project addresses obsolescence, improves system performance, provides a more contemporary system architecture and will reduce the total cost of ownership. The tranches in execution are systems engineering and design including the upgrade of the first radar and delivery of a new command and control system (Initial Operational Capability (IOC) Tranche, formally Tranche 2); and serial upgrade of the remaining two radars (Tranches 3 and 4).

1.2 Current Status

Cost Performance

In-year

As at 30 June 2023, Financial Year (FY) 2022-23 expenditure is $103.5m against the forecast planned expenditure of $105.4m. The variation was due to the transfer of High Power Amplifiers (HPA) funding and a number of minor factors totalling $1.9m.

Project Financial Assurance Statement

As at 30 June 2023, AIR2025 Phase 6 has reviewed the approved scope and budget for those elements required to be delivered by Defence. Having reviewed the current financial contractual obligations of Defence for this project, 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 not applied contingency in FY 2022-23.

Schedule Performance

Since implementing an Alternate Delivery Strategy (ADS) in late 2021, the project has been delivering ahead of contracted dates within the revised schedule to IOC and retains project float against major contracted milestones to IOC. Key achievements over FY 2022-23 include:

- Information Technology installations to support Phase 6 upgrades at the JORN Operations Centre and all three radar sites;
- Successfully demonstrating a minimum viable receive and transmit capability;
- Completion of the new Operations Centre software build to support delivery of a new demonstrator Operations Centre to RAAF;
- Completion of a second Integrated Baseline Review (IBR), confirming validity of the new schedule to IOC; and,
- Development of a collaborative governance framework to escalate issues to promote prompt resolution and implementation of any required remedial action.

BAE Systems Australia Pty Ltd and Defence continue to work collaboratively to improve the delivery performance of the JORN Phase 6 program. This includes evaluating opportunities to improve the efficiency of delivery through tailoring of the Australian Standard for Defence Contracting, contract to better align to a 'continuous capability delivery' model.

Challenges in the resource market are expected to continue to impact the JORN program. Impacts in the supply chain (particularly

Notice to reader

1. 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.

with electronic components and as a result of COVID-19) have also impacted costs and lead times. These issues collectively have the potential to impact on schedule performance (in particular on IOC and Final Operational Capability (FOC) milestones); however these are known risks that Defence and BAE Systems Australia Pty Ltd continue to work collaboratively to mitigate.

Materiel Capability/Scope Delivery Performance

This project has not delivered any materiel capability to date.

The current JORN capability remains fully operational while the project is progressing. As part of the ADS, elements of the system will be introduced incrementally, designed to accelerate the delivery of upgraded capability to Air Force. The strategy will see the JORN Battlespace Surveillance Centre located at RAAF Base Edinburgh upgraded first, and a series of prototype receiver systems progressively delivered culminating in the upgrade of all radar receiver systems.

Government approval may be sought in the future to establish new projects that seek to enhance the JORN capability.

The current scope is expected to be delivered with the exception of one capability enhancement delivered by the Commonwealth as Government Furnished Data that has not achieved an appropriate level of technical maturity.

Note

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

1.3 Project Context

Background

AIR2025 Phase 6 is a complex sovereign development program leveraging Defence Science and Technology Group (DSTG) developed technology. A collaborative relationship between Defence and the prime contractor, BAE Systems Australia Pty Ltd, has been critical to success. Despite the ongoing positive client-supplier relationship, the project has experienced significant schedule challenges during the initial three years of the project, particularly within the systems engineering program (other key streams of activity including hardware and software development remain on track). As a result of the persistent delays, AIR2025 Phase 6 became a Project of Interest in September 2019.

Following completion of a bottom-up re-baseline of the schedule in late 2019 which indicated a potential significant delay to IOC, Defence and BAE Systems Australia Pty Ltd agreed to collaboratively undertake an analysis to understand the cause of additional effort estimates and identify a new approach to deliver the project. This resulted in developing an ADS, which utilised the mature and proven product development completed to date with the intent of rolling out elements of the system as they were developed to progressively retire risk.

In April 2021, BAE Systems Australia Pty Ltd delivered a costed Contract Change Proposal (CCP) to incorporate the ADS as the new program performance measurement baseline into the contract. Defence conducted a detailed evaluation and negotiation that resulted in BAE Systems Australia Pty Ltd submitting a revised CCP in September 2021, which was assessed by Defence and executed in December 2021.

Since execution of the CCP in December 2021, BAE Systems Australia Pty Ltd has implemented the ADS (now termed the Iterative Delivery Strategy) against the contracted deliverables, with a view to delivering hardware and software ahead of schedule. A second IBR was conducted in June 2022 (completed in early July 2023) against the revised contracted performance baseline and has demonstrated the project schedule is achievable.

Uniqueness

With initial experimentation and development commencing over 50 years ago within the DSTG, a world-leading Over The Horizon Radar capability has been established in collaboration with Australian Industry, providing significant Defence capability and economic value to the nation. Project AIR2025 Phase 6 relies on a highly skilled and specialised workforce to design and develop High Frequency Radar technology. The ability to attract and retain a skilled Industry and Defence workforce is a key enabler to successful project delivery.

Defence, rather than BAE Systems Australia Pty Ltd, retains responsibility for key aspects of the JORN system-level performance under the project arrangement due to Defence providing to BAE Systems Australia Pty Ltd specific software elements as mandated Government Furnished Material that directly impact the performance of the JORN System, such as signal processing software.

Major Risks and Issues

The current major project risks and issues subject to remedial action are:

- There is a risk that human resources required to execute the program cannot be sourced or retained impacting on program timelines.
- There is a risk of schedule delays to the program impacting the delivery of capability against agreed milestones.
- There is a risk of cost increases associated with the upgrade of the second and third radars post IOC.
- There is a risk that poorly defined transition points between acquisition and support impact the overall delivery of the AIR2025 Phase 6 project.
- There is an emergent risk that the budget for the upgrade of HPA is insufficient.
- There is an emergent risk that other project factors (e.g. scope changes, inexperienced resources, supply chain issues etc.) will result in cost increases to the project.
- A project issue is that the project budget might be insufficient due to the impact of inflation as the budget at project approval was outturned against a fixed inflation rate.

Other Current Related Projects/Phases

N/A

Note

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

Section 2 – Financial Performance[2]

2.1 Project Budget (out-turned) and Expenditure History

Date	Description	$m		Notes
	Project Budget			
Jan 16	Original Approved (Government First Pass Approval)	49.4		1
Dec 17	Government Second Pass Approval	1,068.5		
	Total at Second Pass Approval		**1,117.9**	
Apr 20	Real Variation – Transfer from Security & Estate Group (SEG)	2.5		2
Jun 20	Real Variation – Scope JORN Enhancement	8.2		3
Sep 21	Real Variation – Budgetary Adjustment	9.5		4
Nov 21	Real Variation – Budgetary Adjustment (Contingency)	2.0		4
Apr 22	Real Variation – Budgetary Adjustment	6.1		3
Apr 23	Real Variation – Budgetary Adjustment (HPA)	141.9		5
Jun 23	Exchange Variation		0.0	6
Jun 23	**Total Budget**		**1,288.0**	
	Project Expenditure			
Prior to Jul 22	Contract Expenditure – BAE Systems Australia Pty Ltd (Prime)	(184.7)		
	Contract Expenditure – Jacobs Australia Pty Ltd (Integrated Work Package (IWP))	(35.7)		
	Contract Expenditure – Lockheed Martin Australia Pty Ltd Engineering Services Contract (ESC)	(20.3)		
	Other Contract Payments	(10.7)		7
			(251.4)	
FY to Jun 23	Contract Expenditure – BAE Systems Australia Pty Ltd (Prime)	(76.6)		
	Contract Expenditure – Jacobs Australia Pty Ltd (IWP)	(10.6)		
	Contract Expenditure – Lockheed Martin Australia Pty Ltd (ESC)	(8.8)		
	Other Contract Payments	(7.5)		8
			(103.5)	
Jun 23	**Total Expenditure**		**(354.9)**	
Jun 23	**Remaining Budget**		**933.1**	

Notes	
1	Government Second Pass Approval includes an $18.3m adjustment to be funded from the unspent portion of the previously approved First Pass funding.
2	SEG received funding to support AIR2025 Phase 6, which included replacing a facility at Radar 3 Transmit site. It was agreed that the replacement facility is best delivered by the JORN Prime Contractor, as it involves specialist fit-out and coordinated delivery within JORN operational constraints.
3	Early access to funding to enable early capability planning and de-risking activities for the JORN Enhancement scope.
4	In FY 2021-22, Air Force transferred all related project operating budgets into the respective Capability Acquisition and Sustainment Group (CASG)-controlled project budget.
5	HPA replacement project funding transfer from Chief of Air Force 13 to AIR2025 Phase 6.
6	The zero value is due to rounding of exchange variation as the majority of the contracts are in Australian Dollars (AUD).
7	Other Contract Payments/Internal Expenses comprises of: $5.0m for AIR2025 Phase 6A, $2.5m for the JORN Priority Industry Capability Support Program, $1.9m for Commonwealth management costs and $1.3m for other operating expenditure including minor contract expenditure.
8	Other Contract Payments/Internal Expenses comprises of: $6.3m for AIR2025 Phase 6A, and $1.2m for other operating expenditure, minor contract expenditure and capital expenditure not attributable to the listed contracts.

2.2A In-year Budget Estimate Variance

Estimate PBS $m	Estimate PAES $m	Estimate Final Plan $m	Explanation of Material Movements
92.1	92.0	105.4	Portfolio Budget Statement (PBS) to Portfolio Additional Estimates Statement (PAES): Variation primarily due to an increase in BAE Systems Australia Pty Ltd Direct Costs (material spend). PAES to Final Plan: Variation due to HPA Budget Transfer, additional Contract Survey & Quote and milestone payments, an underspend for

Notice to reader

2. As per the JCPAA 2022-23 MPR Guidelines, financial figures in the PDSS have been rounded to one decimal point. Section 2 financial tables may include totals and percentages that are impacted due to the rounding of the original financial data.

			engineering services due to reallocation of resources and other minor variations over the period.
Variance $m	(0.1)	13.4	Total Variance ($m): 13.3
Variance %	(0.2)	14.6	Total Variance (%): 14.4

2.2B In-year Budget/Expenditure Variance

Estimate Final Plan $m	Actual $m	Variance $m	Variance Factor	Explanation
		(1.9)	Australian Industry	The project has an end of FY variance due to a combination of the following factors: • Late budget transfer of HPA funding. • Other minor variations during the period relating to project support and Commonwealth management costs.
		-	Foreign Industry	
		-	Early Processes	
		-	Defence Processes	
		-	Foreign Government Negotiations/Payments	
		-	Cost Saving	
		-	Effort in Support of Operations	
		-	Additional Government Approvals	
105.4	103.5	**(1.9)**	**Total Variance**	
		(1.8)	**% Variance**	

2.3A Details of Project Major Contracts – Price

Contractor	Signature Date	Price at		Type (Price Basis)	Form of Contract	Notes
		Signature $m	30 Jun 23 $m			
Lockheed Martin Australia Pty Ltd	Mar 18	15.1	56.1	Variable	Standard Defence Contract	1
BAE Systems Australia Pty Ltd	Mar 18	455.9	651.9	Variable	Standard Defence Contract	2, 3
Jacobs Australia Pty Ltd – IWP	Dec 18	25.0	58.2	Variable	Standard Defence Contract	2, 4

Notes	
1	The price at 30 June 2023 has increased from the initial contract price of $15.1m to $56.1m. This change is due to an increase in required contractor personnel to support the program, an increase to the contract term from three years to seven years and the application of an annual price adjustment to the contract.
2	Contract value as at 30 June 2023 is based on actual expenditure to 30 June 2023 and remaining commitment at current budgeted exchange rates and includes adjustments for indexation (where applicable).
3	The Contract Price at signature of $455.9m (base date July 2016) has increased by $68.3m due to projected price escalation to an estimated Contract Price of $524.2m at signature date, plus an increase of $118.8m resulting from the JORN Re-plan and other minor CCPs totaling $8.9m.
4	Contract value is the estimated project share of the Branch IWP contract and is based on the estimate of project expenditure to the end of December 2024. This contract is expected to increase as further work packages are agreed.

2.3B Details of Project Major Contracts – Contracted Quantities and Scope

Contractor	Contracted Quantities as at		Scope	Notes
	Signature	30 Jun 23		
Lockheed Martin Australia Pty Ltd	N/A	N/A	Provide specialist engineering resources to facilitate Defence's execution of AIR2025 Phase 6.	-
BAE Systems Australia Pty Ltd	N/A	N/A	AIR2025 Phase 6 Prime Contractor that includes (but not limited to) the replacement of obsolescent systems, a new human-machine interface and new diagnosis and management systems.	-
Jacobs Australia Pty Ltd – IWP	N/A	N/A	Service based IWP.	-

Major equipment accepted and quantities to 30 Jun 23
Nil

2.4 Australian Industry Capability

Summary
The project has contracted Australian Industry Capability (AIC) targets based on opportunities to maximise internationally competitive Australian industry involvement which is captured in Lockheed Martin Australia Pty Ltd's AIC Plan in support of engineering services. The project has contracted AIC targets based on opportunities to maximise internationally competitive Australian industry involvement which is captured in BAE Systems Australia Pty Ltd's AIC Plan in the support of their design, manufacturing, and integration, activities. The project has no contracted AIC targets or AIC Plan for Jacobs Australia Pty Ltd as they are one of several contractors under the CASG-wide Major Service Provider contract that provides above the line work force to projects.
Note
AIC Plans for contracts worth more than $20 million are published on Defence's website. Australian Industry Capability is excluded from the scope of the Auditor-General's Independent Assurance Report.

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	JORN Mission and Support System	Jan 19	N/A	Sep 19	8	1, 2
System Definition	JORN Mission and Support System	Jan 19	N/A	Jun 20	17	1, 2
Preliminary Design	JORN Mission and Support System	Oct 19	Not For Publication (NFP)	NFP	NFP	3
Detailed Design	JORN Mission and Support System	Jun 20	NFP	NFP	NFP	3
Support System Detailed Design	JORN Mission and Support System	Dec 20	NFP	NFP	NFP	3

Notes	
1	The original schedule included a Combined System Requirements Review and System Definition Review scheduled for January 2019. These were agreed to be de-coupled in December 2018 and finalised through a CCP. The original contracted date of January 2019 did not change.
2	The project experienced persistent lag in execution of the systems engineering program. Key drivers for the delays are predominantly attributed to the underestimation of JORN systems engineering complexity and required design effort.
3	A CCP to reflect the ADS was executed in December 2021 reflecting revised schedule dates. Forecast dates for capability realisation are NFP.

3.2 Contractor Test and Evaluation Progress

Test and Evaluation	Major System/Platform Variant	Original Planned	Current Contracted	Achieved/ Forecast	Variance (Months)	Notes
Modification Readiness Review 1	Radar 1 & Operations Centre	Sep 21	NFP	NFP	NFP	1
System Acceptance	Radar 1 & Operations Centre	Jan 24	NFP	NFP	NFP	1
Modification Readiness Review 2	Radar 2	May 24	NFP	NFP	NFP	1
System Acceptance	Radar 2	Mar 26	NFP	NFP	NFP	1
Modification Readiness Review 3	Radar 3	May 26	NFP	NFP	NFP	1
System Acceptance	Radar 3	Jun 28	NFP	NFP	NFP	1

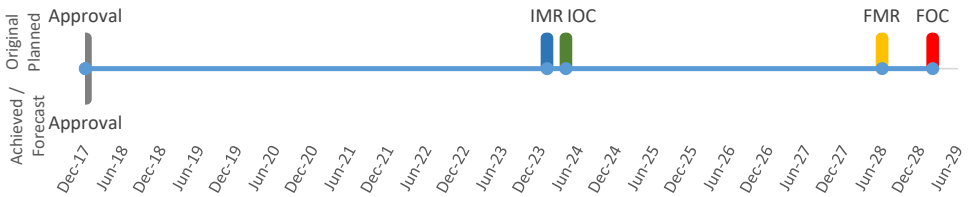
Notes	
1	A CCP to reflect the ADS was executed in December 2021 reflecting revised schedule dates. Forecast dates for capability realisation are NFP.

3.3 Progress Toward Materiel Release and Operational Capability Milestones

Item	Original Planned	Achieved/Forecast	Variance (Months)	Notes
Initial Materiel Release (IMR)	Jan 24	NFP	NFP	1
Initial Operational Capability (IOC)	Apr 24	NFP	NFP	1
Materiel Release 2 (MR2)	Mar 26	NFP	NFP	1
Operational Capability 2 (OC2)	May 26	NFP	NFP	1
Final Materiel Release (FMR)	Jun 28	NFP	NFP	1
Final Operational Capability (FOC)	Jan 29	NFP	NFP	1

Notes	
1	A CCP to reflect the ADS was executed in December 2021 reflecting revised schedule dates. Forecast dates for capability realisation are NFP.

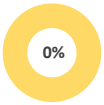
Schedule Status at 30 June 2023



Note
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	
	**Green:** The project team expects to meet capability requirements as expressed in the Materiel Acquisition Agreement with the exception of one capability enhancement.
	**Amber:** N/A
	**Red:** The project has received government approval for the removal of a Commonwealth developed Optional Capability Enhancement from the scope of the project that has not achieved an appropriate level of technical maturity.

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)	The first JORN radar and supporting systems upgraded with new hardware and software; New Operations Centre that supports operation of the upgraded Radar and legacy systems.	Not yet Achieved
Initial Operational Capability (IOC)	The first JORN radar and supporting systems upgraded with new hardware and software; New Operations Centre that supports operation of the upgraded Radar and legacy systems; Training to enable sufficient personnel to conduct operations has been provided; Sufficient sparing and support arrangements are in place to sustain operations;	Not yet Achieved

	Support contracts are established for all upgraded and existing JORN systems, radar sites and the JORN Coordination Centre.	
Materiel Release 2 (MR2)	The second JORN radar and supporting systems upgraded with the new hardware and software.	Not yet Achieved
Operational Capability 2 (OC2)	The second JORN radar and supporting systems upgraded with new hardware and software; Training to enable sufficient personnel to conduct operations has been provided; Sufficient sparing and support arrangements; Support contracts are established for all upgraded and existing JORN systems, radar sites and the JORN Coordination Centre.	Not yet Achieved
Final Materiel Release (FMR)	The third JORN radar and supporting systems upgraded with new hardware and software; Ionospheric sounder network is upgraded.	Not yet Achieved
Final Operational Capability (FOC)	The third JORN radar and supporting systems upgraded; Achievement of all Capability Enhancement Elements; Achievement of the operational parameters as defined in the Operational Concept Document; Training to enable sufficient personnel to conduct operations in accordance with the defined level of capability and preparedness requirements is provided; Sufficient sparing and support arrangements are in place to sustain operations in accordance with the defined level of capability and preparedness requirements; Support contracts are established for all upgraded and existing JORN systems, radar sites and the JORN Coordination Centre.	Not yet Achieved

Section 5 – Major Risks and Issues

5.1 Major Project Risks

Identified Risks (risk identified by standard project risk management processes)		
Ref#	Description	Remedial Action
1	There is a risk that human resources required to execute the program cannot be sourced or retained impacting on program timelines.	Defence and BAE Systems Australia Pty Ltd have been collaboratively working together to better understand the resourcing challenges in the defence market, particularly in South Australia. The challenge with resourcing comes from both internal and external sources including other key defence projects as many of the skills required to resource these projects are similar.
2	There is a risk of schedule delays to the program impacting the delivery of capability against agreed milestones.	The new performance measurement baseline is informed by a number of critical lessons learned from the original program. A newly established, collaborative-based governance framework will ensure early visibility and elevation of performance issues to enable pro-active remediation.
3	There is a risk of cost increases associated with the upgrade of the second and third radars post IOC.	A technical contingency allocation has been identified for mitigation strategies that relate to design to cost and manufacture. Effective use of a competitive supply chain approach.
4	There is a risk that poorly defined transition points between acquisition and support impact the overall delivery of the AIR2025 Phase 6 project.	Development of an integrated master schedule will underpin effective cost and risk planning. This risk has now been combined with other project risks and has been downgraded to Low risk.
Emergent Risks (risk not previously identified but has emerged during 2022–23)		
Ref#	Description	Remedial Action
1	There is a risk that the budget for the upgrade of HPA is insufficient.	Current HPA funding was based on early estimates and may not be sufficient to deliver the replacement HPA. The project proposes to use project contingency for any shortfalls and has included estimates in the project contingency allocation.
2	There is a risk that other project factors (e.g. scope changes, inexperienced resources, supply chain issues etc.) will result in cost increases to the project.	Defence has implemented a tiered approach to project governance to ensure that changes to project costs are managed and potential opportunities to offset cost are explored including changes to delivery and assurance activities.

5.2 Major Project Issues

Ref#	Description	Remedial Action
1	The project budget might be insufficient due to the impact of inflation as the budget at project approval was outturned against a fixed inflation rate.	The project may need to access contingency funding if current funds prove to be insufficient to deliver project outcomes.

Note
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
In line with Defence instruction and CASG Lessons policy, the project conducts scheduled reviews of its captured lessons information (including any observations, insights and/or lessons identified) as well as lessons information contained within the Defence Lessons Repository. The project has captured six lessons related to First of Type Equipment, Schedule Management and Governance. Three project lessons are provided below (note this does not include all project lessons):	The project has not categorised any of its lessons information as a whole-of-Defence Lesson Learned.
Lesson Type – Observation. Maintaining collaboration, transparent communication and disciplined engagement with all stakeholders is critical for managing technical requirements and effective risk management.	First of Type Equipment
Lesson Type – Lesson Identified. Adopting a holistic 'enterprise' approach to sustaining existing capability, delivering approved projects, approving future projects, and export opportunities, ensures that allocation of limited 'enterprise' resources across Defence and industry are optimised to minimise risks to delivery.	Governance
Lesson Type – Observation. Traditional waterfall approaches rely on a single 'big bang' integration event close to the IMR milestone which is difficult to mitigate using sequential top-down design phase analysis. More agile approaches to program delivery allow the parties to learn together, adjust to overcome emergent technical issues within schedule and cost parameters, and deliver capability faster to the warfighter.	Schedule Management

Section 7 – Project Structure

7.1 Project Structure as at 30 June 2023

Unit	Name
Division	Air Defence & Space Systems Division
Branch	Air and Space Surveillance and Control Branch