

## Project Data Summary Sheet<sup>148</sup>

Project Number	<b>LAND 121 Phase 4</b>
Project Name	<b>Protected Mobility Vehicle – Light</b>
First Year Reported in the MPR	2016-17
Capability Type	Replacement
Acquisition Type	Developmental
Capability Manager	Chief of Army
Government 1st Pass Approval	Oct 08
Government 2nd Pass Approval	Aug 15
Budget at 2 <sup>nd</sup> Pass Approval	\$1,945.0m
Total Approved Budget (Current)	<b>\$1,979.6m</b>
2018-19 Budget	<b>\$117.5m</b>
Project Stage	Detailed Design Review
Complexity	ACAT I



### Section 1 – Project Summary

#### 1.1 Project Description

LAND 121 Phase 4 will acquire and deliver into service 1100 Protected Mobility Vehicles – Light (PMV-L) and 1058 companion trailers for command, liaison, reconnaissance and utility roles; and the associated training and support systems. Stage One (Engineering and Manufacturing Development) of the project delivered 10 vehicles and five trailers for various test and evaluation activities. Stage Two (Low-Rate Initial Production) delivered an additional six vehicles and four trailers for reliability testing and verification / validation activities. Stage Two will also deliver the first 100 production vehicles and trailers. Stage Three (Full-Rate Production) will deliver the remaining 1000 production vehicles and 958 trailers.

The PMV-L will replace around one third of the current Land Rover fleet, and represents a new capability that will provide the Australian Defence Force (ADF) with a highly protected and deployable light vehicle fleet designed to provide an optimum balance of six fundamental requirements: survivability, mobility, usability, payload, sustainability and communications.

The PMV-L is the ADF's only protected vehicle capable of being lifted by ADF Chinook helicopters. The vehicle also pioneers a next-generation open architecture communications management system, the Integral Computing System (ICS), which **integrates** the vehicle's various communications systems through a common interface.

The PMV-L fleet will consist of two variants which may perform specific mission roles:

- 4-Door PMV-L: The 4 Door vehicle may perform the following roles:
  - Command - Carriage of up to four personnel with additional integrated electronic command, control and communication systems.
  - Liaison - Carriage of up to four personnel with a general communication fit.
  - Reconnaissance - Carriage of up to four personnel to perform light infantry, reconnaissance and Air Force security functions.
- 2-Door PMV-L: The 2-Door vehicle will perform the following role:
  - Utility - Carriage of two personnel and cargo.

Thales Australia has been contracted by Defence for the development, production and through-life-support of the PMV-L capability. Thales Australia is also the nominated Prime Systems Integrator for the ICS.

#### 1.2 Current Status

##### Cost Performance

In-year

#### 148 Notice to reader

Forecast dates and Sections: 1.2 (Material Capability Delivery Performance), 1.3 (Major Risks and Issues), 4.1 (Measures of Material Capability 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.

As at 30 June 2019, financial year 2018/19 expenditure was \$89.3m against the forecasted expenditure of \$117.5m. The variation primarily reflects delays in the delivery of engine components caused by the Hawkei engine manufacturer, Steyr Motors, entering voluntary administration. This issue will delay future milestones and support system payments into FY19/20. There is an element of variation due to Defence cash management at end FY18/19.

Project Financial Assurance Statement

As at 30 June 2019, the project has reviewed its approved scope and budget for those elements required to be delivered by Defence. Having reviewed the current financial and contractual obligations for this project, current known risks and estimated future expenditure, Defence considers, as at the reporting date, there is sufficient budget remaining for the project to complete against the agreed scope.

Contingency Statement

The project has not applied contingency in the financial year.

**Schedule Performance**

Under Stage One (Engineering and Manufacturing Development) of the LAND 121 Phase 4 Acquisition Contract, Thales Australia delivered 10 vehicles and five trailers on schedule for the purpose of further development and testing. As part of this stage Thales Australia conducted a Reliability Growth Trial (RGT). During RGT, the performance of the vehicles exceeded the number of critical failures allowable under the contract. Defence required Thales Australia to remediate these critical failures in order to fulfil the contractual reliability requirements of this Stage. This remediation activity resulted in an additional RGT, extending Stage One by a further four months.

The RGT was separated into the following three activities:

- RGT Number One was conducted over the period July to December 2016 and provided Thales with the opportunity to resolve any issues with the vehicles ahead of the formal trial activities that commenced under RGT Number Two.
- RGT Number Two commenced in November 2016. In January 2017, the pilot Hawkei vehicles had exceeded the seven allowable critical failures under the contract. Identified key root causes include supplier quality issues and immature components affecting hardware and software integration. A six-week corrective action period was implemented to allow Thales to undertake engineering upgrades.
- RGT Number Three (May to July 2017) followed this, which demonstrated reliability improvements on a number of sub-systems, but a number of recurring failures were evident.

Thales Australia was granted exit of Stage One on 5 September 2017, with the caveat that Thales Australia continued to address the reliability issues. A Reliability Demonstration Test was conducted from October 2017 until November 2018 to confirm that the reliability improvements have been implemented prior to Production Reliability Acceptance Testing and progress into Full Rate Production. Delays have been incurred due to the reliability issues. The achievement of key milestones is reliant on the resolution of these issues.

From July 2016 the system definition for the ICS was finalised and design reviews successfully undertaken on schedule. An ICS Integration Lab was established in Sydney with stand-alone and on-vehicle demonstrations of the ICS capability completed as contracted. The project achieved a live demonstration of the ICS with the Capability Manager on 31 July 2017.

In March 2017, the PMV-L successfully passed scheduled survivability test events for the specified level of under-belly land mine threat. Under-wheel blast testing was successfully completed in June 2018 and a side blast test was successfully conducted on a 4-Door vehicle in November 2018. An external air lift trial was successfully conducted over June-July 2017 at Townsville on test vehicles (two-door and four-door vehicles) and trailers in various load states.

The RDT was completed in November 2018, with a number of residual reliability issues outstanding. Thales provided sufficient Objective Quality Evidence to resolve these outstanding issues to enable Production Reliability Acceptance Test (PRAT) to commence in May 2019.

Acceptance of the Stage Two test and evaluation activities (AV&V, including RDT and PRAT) by Defence is required prior to exiting Stage Two. Full-Rate Production is now expected to commence in Quarter 2 2020.

Ongoing reliability issues initiated remedies under the contract, including stop payments and liquidated damages.

Initial Materiel Release (IMR) will not be achieved by May 2019 due to the Hawkei reliability issues, design maturity and production delays. These issues will also impact the achievement of Initial Operating Capability by December 2019. The full impact of Steyr Motors entering voluntary administration was not fully understood at the 30 June 2019 PDSS.

**Materiel Capability Delivery Performance**

16 PMV-L pre-production baseline vehicles and nine trailers have been delivered for development and testing purposes under Stages One and Two. The acceptance process for the Low-Rate Initial Production (LRIP) vehicles and trailers commenced in January 2018, with the first vehicles being formally accepted by the Commonwealth in March 2018. The Commonwealth has currently accepted 80 LRIP vehicles and 88 trailers (out of a total of 1100 vehicles and 1058 trailers planned for delivery into service).

Defence conducted a trial involving the deployment of two Hawkei vehicles to Iraq and Afghanistan. The vehicles were deployed into Iraq as part of Task Group Taji and then redeployed in April 2018 to the Australian contingent in Kabul, Afghanistan. This trial commenced in December 2017 and concluded in August 2018. The key trial objectives included the identification of operational and support issues and deployment considerations for the Hawkei capability.

Thales advised the Commonwealth on 29 November 2018 that the Hawkei engine supplier, Steyr Motors, had entered voluntary administration. Thales has secured the delivery of 100 Low-Rate Initial Production engines, and has placed an order with Steyr Motors for a further 1,000 engines to satisfy the Full-Rate Production quantities required for LAND 121 Phase 4. Thales has advised the Commonwealth that the impact of the delay on the production line will not be fully understood until the completion of proceedings with the Steyr Motors' administrator. The IMR milestone will be delayed 12 months to May 2020 due to Hawkei reliability issues, design maturity and production delays caused by Steyr Motors entering voluntary administration.

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The Hawkei support system continues to be developed. Operator Training commenced at the Army School of Transport in September 2018. Maintainer Training is expected to commence in Quarter 4 2019.

**Note**

Forecast dates and capability assessments are excluded from the scope of the review.

1.3 Project Context

**Background**

LAND 121 Phase 4 was established to address a new capability requirement within the ADF's land mobility assets emanating from the absence of lightweight and light class field vehicles with the requisite levels of ballistic and blast protection.

At First Pass in October 2008, Government agreed for Defence to pursue the development of a 'next generation' PMV-L by joining the US Joint Light Tactical Vehicle (JLTV) Program (Option One) and at the same time retain the possibility of acquiring a Market Available Vehicle (MAV) in the event JLTV proves unsuitable (Option Two). In May 2009, Government directed that an Australian indigenous option for PMV-L be considered. In June 2009, a Manufactured and Supported in Australia (MSA) Option (Option Three) was included in LAND 121 Phase 4 through the release of a Request for Proposal. In 2009, Defence paid \$43.0m to pursue the development of a 'next generation' PMV-L by joining the US Joint Light Tactical Vehicle (JLTV) Program. The funding was provided by Capability Development Group and has not formed-part of the LAND 121 Phase 4 project budget. First to Interim Pass funding was provided in November 2009 following approval of MAA V2.0. Where, Government agreed that Land 121 Phase 4 would return to Government for an Interim Pass decision on which option is to be pursued to Second Pass.

In May 2010, Government agreed that the MSA Option be further investigated prior to Interim Pass through the conduct of initial prototyping activities. On 30 June 2010, a draft schedule for each option to deliver the PMV-L capability was submitted to the Government for consideration. Stage One MSA funding was provided in July 2011 following approval of Materiel Acquisition Agreement (MAA) V2.1. Stage One of the MSA Option consisted of assessing six developmental Line of Departure vehicles (LOD) that met the Australian content requirement. Two from each of the three companies - Force Protection Europe Ltd, General Dynamics Land Systems-Australia and Thales Australia Ltd against function and performance specifications and value for money. Through the procurement process, it was determined that there were no off-the-shelf options available that met all ADF requirements.

At Interim Pass in December 2011, Government refined its direction to the following:

- directed Defence to cease active participation in the US JLTV Program;
- selected Thales Australia's PMV-L as the preferred vehicle for further development and testing under Stage Two of the MSA Option (Option Three); and
- directed Defence to continue observing the US JLTV Program, given its potential to provide an alternative at Second Pass.

Interim pass funding was provided in April 2012 following approval of MAA V3.0. Defence entered into Stage Two of the MSA Option with Thales Australia to carry out further development of their PMV-L, culminating in a program of trials and testing of the prototypes in late 2013. Additional development work and testing were carried out in 2014 under the MSA Stage Two through a Risk Reduction Activity (RRA) aimed at reducing residual technical risk to an acceptable level.

In August 2015, Government provided Second Pass Approval for LAND 121 Phase 4 to acquire Thales Australia's PMV-L. Second Pass funding was provided in September 2015. Subsequently, LAND 121 Phase 4 signed a contract in October 2015 with Thales Australia to acquire and support 1100 PMV-L vehicles and 1058 trailers.

The Acquisition Contract contains three distinct stages that reflect the developmental nature of the PMV-L capability, and which minimises production rework:

- Stage One: Engineering and Manufacturing Development. Includes the provision of 10 vehicles and five trailers, including test vehicles and trailers; the conduct of a vehicle RGT and other developmental test and evaluation activities. Acceptance of these results by Defence was required prior to exiting Stage One.
- Stage Two: Low-Rate Initial Production (LRIP). Includes the production of 100 vehicles and 100 trailers, plus six test vehicles and four trailers based on an approved production baseline; the conduct of a PRAT, and final acceptance testing and evaluation activities.
- Stage Three: Full-Rate Production (FRP). The production of the remaining vehicles and trailers based on the approved FRP baseline, and the achievement of IMR and Final Materiel Release (FMR). This stage will also include the uplift of all LRIP vehicles and trailers to the FRP build standard.

Support requirements for the PMV-L have been incorporated into the existing Protected Mobility Vehicle-Medium (Bushmaster) Through Life Support Contract. It is anticipated that integrating the support arrangements for both fleets will **reduce the overall cost of ownership of the vehicle systems by approximately \$270 million over the 15-year life of the vehicle systems.**

**Uniqueness**

LAND 121 Phase 4 is a developmental project specifically designed to meet the ADF's requirements. The uniqueness of the PMV-L stems from the combination of the following in a single vehicle:

- A high level of blast, ballistic and fragmentation protection, enabling greater deployability within high risk operational environments;
- External Air Transport Mass, enabling the capability to be the ADF's only protected vehicle capable of being lifted by ADF Chinook helicopters;
- A next-generation Generic Vehicle Architecture based C4I solution - Integral Computing System (ICS); and
- Utilise a modular armour system to enable enhanced protection based on mission specific roles.

**Major Risks and Issues**

The Project **currently** has 17 'high' rated risks **and issues** (pre-mitigation rating). The 'high' rated risks have been consolidated into the following **four** broader descriptions, as described in section 5.1:

- There is a chance the Hawkei vehicle will not successfully complete the Reliability Growth Program, impacting on cost, schedule and reputation;
- There is a chance that production delays from vehicle reliability and quality issues, and component availability will impact on the achievement of the Initial Materiel Release and Initial Operating Capability milestones;
- There is a chance that the Hawkei Full-Rate Production baseline will not fully meet the user's expectations, due to scope, budget and vehicle design constraints. This will impact on cost, schedule and reputation; and
- There is a chance that the LAND 121 Phase 4 Program will be discontinued. This will result in the PMV-L capability not being acquired.

The 'high' rated issues have been consolidated into the following six broader descriptions in Section 5.2:

- Reliability Program development was not completed on time, resulting in a delay in entering PRAT.
- The delays in the provision of technical and logistic support data, due to design maturity and reliability issues, have impacted the development of the PMV-L through-life-support package.
- ICS development has been delayed due to the ICS support system and maintenance documentation not being completed to schedule.
- The vehicle reliability issues and component delays have impacted the project schedule and delayed the achievement of IOC, by 12 months from December 2019 to December 2020.
- The Introduction Into Service of the Hawkei has been affected by the Introduction Into Service of other LAND 121 vehicles, impacting on schedule and reputation.
- Some capability requirements have not been met by Thales' current design at this stage of the design process.

#### Other Current Related Projects/Phases

LAND 121 is a multi-phased program providing the ADF with current-generation high-capability field vehicles, modules and trailers. **The other current** LAND 121 projects are:

- LAND 121 Phase 3B – This project is providing the ADF with 2,707 protected and unprotected medium and heavy vehicles, along with 1,753 matched trailers. This will provide payloads of between four and seventy tonnes for a range of logistics functions, including vehicle recovery, freight, bulk liquid distribution and personnel carriage.
- LAND 121 Phase 5B – This project is a follow-on acquisition from LAND 121 Phase 3B, and is providing the ADF with an additional 1,044 medium and heavy vehicles, 872 modules and 812 trailers.
- LAND 200 Tranche 2 – This project expands LAND 200 Tranche 1 capability across Army with new collaborative planning, control and monitoring tools for Brigade and Divisional level headquarters and integrates the system into additional platforms. The two major sub-systems of the Battlefield Command Systems are the Battle Management System and the Tactical Communications Network.

#### Note

Major risks and issues are excluded from the scope of the review.

## Section 2 – Financial Performance

### 2.1 Project Budget (out-turned) and Expenditure History

Date	Description	\$m	Notes
	<b>Project Budget</b>		
May 08	Original Approved	1.8	
Nov 09	Real Variation - Scope	5.7	1
Jul 11	Real Variation - Scope	31.5	2
Apr 12	Real Variation - Scope	48.4	3
Sep 15	<b>Government Second Pass Approval</b>	1,857.6	
	<b>Total at Second Pass Approval</b>	1,945.0	4
Jul 10	Price Indexation	0.4	5
Jun 19	Exchange Variation	34.2	
Jun 19	<b>Total Budget</b>	<b>1,979.6</b>	
	<b>Project Expenditure</b>		
Prior to Jul 18	Contract Expenditure – Thales Australia (Prime Contract)	(361.1)	
	Contract Expenditure – Thales Australia prototyping activities (MSA Stage One and Stage Two Contract)	(58.7)	6
	Other Contract Payments/Internal Expenses	(43.3)	7
		(463.1)	
FY to Jun 19	Contract Expenditure – Thales Australia (Prime Contract)	(80.0)	
	Other Contract Payments/Internal Expenses	(9.3)	8
		(89.3)	
Jun 19	<b>Total Expenditure</b>	<b>(552.4)</b>	4
Jun 19	<b>Remaining Budget</b>	<b>1,427.2</b>	
	<b>Notes</b>		

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1	This amount reflects funding approval at First Pass Approval.
2	This amount reflects approval to undertake MSA Stage One prototyping.
3	This amount reflects funding approval at Interim Pass for MSA Stage Two prototyping.
4	The Budget and Expenditure amounts do not reflect the \$43.0m paid in 2009. Due to the payment being provided by Capability Development Group and was not part of the LAND 121 Phase 4 project budget.
5	Up until July 2010, indexation was applied to project budgets on a periodic basis. The cumulative impact of this approach was \$0.3m. In addition to this amount, the impact on the project budget as a result of out-turning was a further \$0.1m having been applied to the remaining life of the project.
6	These expenditures relate to pre Second Pass costs associated with exploring the Government initiated MSA Option (Option Three) and the contracts are now closed.
7	Expenses comprise of: MAV prototyping activities (\$17.7m); <b>External Service Providers (\$8.1m)</b> , Project administrative costs (\$5.0m); <b>Non-Prime contracts External Service Providers (\$4.9m)</b> ; costs related to testing / trials (\$3.7m); Legal costs (\$2.1m) and US JLTV Program (\$1.8m).
8	Expenses comprise of: <b>External Service Providers (\$4.7m)</b> ; Non-Prime contracts (\$2.2m); Costs related to testing/trials (\$1.9m); and Project administrative costs (\$0.5m).

## 2.2A In-year Budget Estimate Variance

Estimate PBS \$m	Estimate PAES \$m	Estimate Final Plan \$m	Defence's Explanation of Material Movements
395.6	202.8	117.5	PBS – PAES: The forecast variation is primarily due to ongoing vehicle reliability issues which is expected to delay the commencement of Full-Rate Production. PAES – Final Plan: The variation reflects issues with delays in the delivery of engine sub-components caused by the Hawkei engine manufacturer, Steyr Motors, entering voluntary administration. These issues will delay several milestone and support system payments into the 2019-20 financial year.
Variance \$m	(192.8)	(85.3)	Total Variance (\$m): (278.1)
Variance %	(48.7)	(42.1)	Total Variance (%): (70.3)

## 2.2B In-year Budget/Expenditure Variance

Estimate Final Plan \$m	Actual \$m	Variance \$m	Variance Factor	Explanation
		(17.3)	Australian Industry	The variation primarily reflects delays in the delivery of engine components caused by the Hawkei engine manufacturer, Steyr Motors, entering voluntary administration. This issue will delay future milestones and support system payments into FY19/20. Additionally, there is an element of variation due to Defence cash management at end FY18/19 with some payments being made in FY19/20.
			Foreign Industry	
			Early Processes	
		(10.9)	Defence Processes	
			Foreign Government Negotiations/Payments	
			Cost Saving	
			Effort in Support of Operations	
			Additional Government Approvals	
117.5	89.3	(28.2)	<b>Total Variance</b>	
		(24.0)	<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 19 \$m			
Thales Australia	Jul 10	9.0	58.7	Firm	ASDFCON	2, 3
Thales Australia	Oct 15	1,328.5	1,478.0	Fixed	ASDFCON	1, 2, 4
<b>Notes</b>						
1	Price variation from Contract Signature is due to approved Contract Change Proposals, predominantly to progress the development and integration of ICS.					
2	Contract value as at 30 June 2019 is based on actual expenditure to 30 June 2019 and remaining commitment at current exchange rates, and includes adjustments for indexation (where applicable).					
3	Price variation from contract signature was to exercise the MSA Stage Two option.					
4	The contract has been re-evaluated as being a 'fixed' price because the contract value is 'fixed', less price escalation.					
Contractor	Quantities as at		Scope	Notes		
	Signature	30 Jun 19				
Thales Australia	2 PMV-L	8 PMV-L	Design, develop and demonstrate prototype vehicles			
Thales Australia	1100 PMV-L and 1058 Trailers	1100 PMV-L and 1058 Trailers	Thales Australia is contracted to deliver 1100 PMV-L (635 4-Door and 465 2-door vehicles) and 1058 Trailers	1		

<b>Major equipment received and quantities to 30 Jun 19</b>						
Defence received 10 pre-production baseline vehicles and five trailers from Thales Australia on schedule for the purpose of various test and evaluation activities under Stage One (Engineering and Manufacturing Development) of the LAND 121 Phase 4 Acquisition Contract. Defence received an additional six pre-production baseline vehicles and four trailers for reliability testing, and verification & validation activities in Stage Two. <b>80</b> vehicles and <b>88</b> trailers from the Low-Rate Initial Production quantities have been accepted by the Commonwealth as at <b>30 June 2019</b> .						
<b>Notes</b>						
1	The 16 test vehicles and nine test trailers for development and testing activities are in addition to the 1100 PMV-L and 1058 trailers.					

### Section 3 – Schedule Performance

#### 3.1 Design Review Progress

Review	Major System/Platform Variant	Original Planned	Current Planned	Achieved/Forecast	Variance (Months)	Notes
Detailed Design	PMV-L and Trailer	Mar 16	N/A	Apr 16	1	1
	ICS	Jan 17	N/A	Dec 16	(1)	2
Preliminary Design	ICS	Sep 16	N/A	Sep 16	0	
Critical Design	PMV-L, Trailer and ICS	Apr 17	Aug 17	Oct 17	6	3
Support System Detailed Design (Operator)	Support System	Jun 17	Jun 18	Aug 18	14	4, 5
Support System Detailed Design (Maintainer)	Support System	Jun 17	Jan 19	Oct 19	28	5
<b>Notes</b>						
1	The variance is caused by the Contractor's delay in closing out the action items.					
2	The Contractor and the project agreed to conduct the Review early, thus the early achievement. The <b>Commonwealth</b> approval of ICS <b>Detailed Design Review</b> Minutes of Meeting was achieved on 19 December 2016.					
3	The variance is due to the vehicle performance exceeding the number of critical failures allowable under RGT. Stage One (Engineering and Manufacturing Development) <b>was</b> extended by a four month period via CCP032 (executed 05 April 2017) to allow Thales Australia to remediate the critical failures and to undertake an additional RGT in order to fulfil the contractual requirements under Stage <b>Two</b> .					
4	The variance of <b>Support System Detailed Design Review (SSDDR)</b> of 14 months is due to the LRIP baseline not being ready for review until <b>Critical Design Review</b> exit in October 2017 and the contractor failed to meet the entry criteria in the <b>SSDDR</b> Checklist.					
5	<b>The SSDDR was split into separate 'Operator' and 'Maintainer' reviews after the execution of CCP055 in November 2018 to align the training deliverables with the Introduction Into Service of the capability.</b>					

#### 3.2 Contractor Test and Evaluation Progress

Test and Evaluation	Major System/Platform Variant	Original Planned	Current Planned	Achieved/Forecast	Variance (Months)	Notes
Maintenance Demonstration	PMV-L, Trailer and ICS	Dec 16	Dec 16	Jul 17	7	1
Reliability Growth Trial (RGT)	PMV-L and Trailer	Mar 17	Jul 17	N/A	N/A	2
Reliability Demonstration Test (RDT)	PMV-L and Trailer	Feb 18	N/A	Nov 18	9	3
Development Test & Evaluation (DT&E)	PMV-L, Trailer and ICS	Mar 17	Sep 17	Sep 17	6	4
Initial Maintenance Evaluation	PMV-L, Trailer and ICS	Oct 17	Jan 18	Jun 18	8	5
<b>Second Maintenance Evaluation</b>	<b>PMV-L, Trailer and ICS</b>	<b>Jan 19</b>	<b>N/A</b>	<b>Jul 19</b>	<b>7</b>	<b>5</b>
Acceptance Verification and Validation (AV&V)	PMV-L, Trailer and ICS	Jun 18	Jan 19	<b>Dec 19</b>	<b>18</b>	6, 7
Production <b>Reliability</b> Acceptance Test (PRAT)	PMV-L and Trailer	Jun 18	Jan 19	<b>Mar 20</b>	<b>21</b>	7
Low-Rate Initial Production (LRIP) Acceptance Last Batch	PMV-L, Trailer and ICS	Jun 18	Jan 19	<b>Aug 19</b>	<b>14</b>	6, 7
Full-Rate Production (FRP) Acceptance Last Batch	PMV-L, Trailer and ICS	Oct 20	May 21	<b>Sep 21</b>	<b>11</b>	6, 7
<b>Notes</b>						
1	The variance is due to the Commonwealth rejecting the first two versions of the Maintenance Demonstration Acceptance Verification Reports (AVR) submitted on 24 January 2017 and 30 March 2017. The approved version of the report was submitted to the Commonwealth on 01 June 2017, with the Notice of Approval signed on 03 July 2017.					
2	RGT was separated into the following three activities: <ul style="list-style-type: none"> <li>RGT Number One was conducted over the period July to December 2016 and provided Thales with the opportunity to resolve any issues with the vehicles ahead of the formal trial activities that commenced under RGT Number Two.</li> </ul>					

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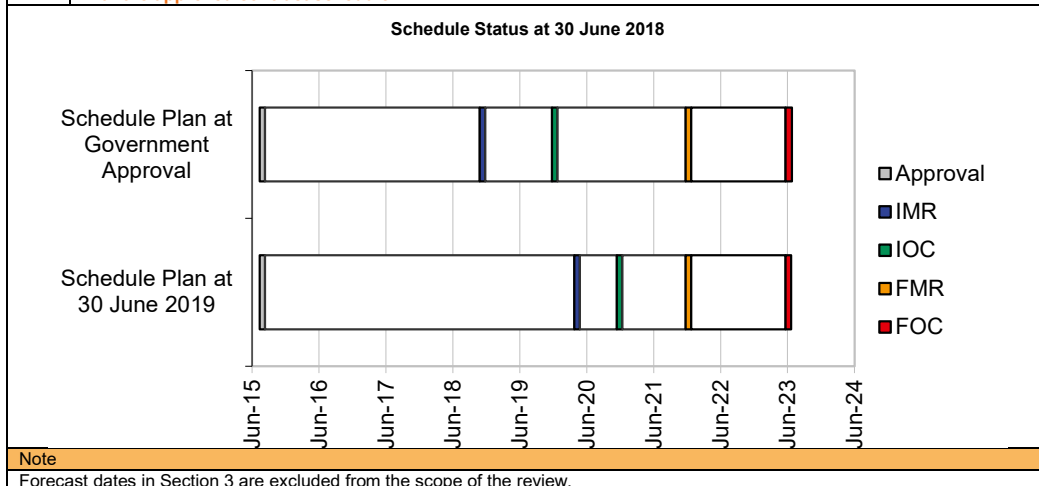


	<ul style="list-style-type: none"> <li>RGT Number Two commenced in November 2016. In January 2017, the pilot Hawkei vehicles had exceeded the seven allowable critical failures under the contract. Identified key root causes include supplier quality issues and immature components affecting hardware and software integration. A six-week corrective action period was implemented to allow Thales to undertake engineering upgrades.</li> <li>RGT Number Three (May to July 2017) followed this, which demonstrated reliability improvements on a number of sub-systems, but a number of recurring failures were evident.</li> </ul>
3	The RDT was introduced as a Contract Change to confirm that failures identified during the RGT had been rectified before entering into the Production Readiness Acceptance Test. The RDT will prove that the implemented solutions for Critical Failure and Effective Function Failure described in the Reliability Remediation Plan have been resolved to the Commonwealth's satisfaction. The nine month delay in completing RDT is due to the delay in remediating the outstanding reliability issues.
4	As part of the extension of Stage One (Engineering and Manufacturing Development), DT&E has also been extended to facilitate further development testing and to mitigate against the AV&V activities required under Stage Two (LRIP).
5	The approval of AVR for the Initial Maintenance Evaluation was delayed by seven months due to the initial submission of the report being rejected by the Commonwealth, primarily due to the incompleteness of the Interactive Electronic Technical Publication (IETP) presented by Thales Australia. <b>A second Maintenance Evaluation (ME2) was conducted in September 2018 to ensure the changes requested by the Commonwealth from the Initial Maintenance Evaluation were incorporated into the IETP. The Commonwealth received the final report from Thales supporting the achievement of this activity on 21 June 2019.</b>
6	AV&V has been delayed by 18 months due to the requirement to extend reliability testing, which impacted on the date that the LRIP vehicle build state was established between the Commonwealth and Thales. The delay in establishing the vehicle build state impacted on vehicle availability to conduct AV&V activities. <b>The reliability issues, design maturity and production delays have further impacted the completion of AV&amp;V.</b>
7	As part of the extension of Stage One (Engineering and Manufacturing Development), the start dates of some Stage Two (LRIP) and Stage Three (FRP) activities have also been delayed. <b>Defence senior leadership is working closely with Thales to assess the vehicle's progress through PRAT, a pre-requisite for FRP.</b>

3.3 Progress Towards Materiel Release and Operational Capability Milestones

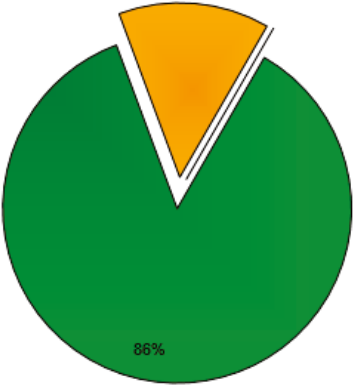
Item	Original Planned	Achieved/Forecast	Variance (Months)	Notes
Initial Materiel Release (IMR)	Dec 18	May 20	17	1
Initial Operational Capability (IOC)	Dec 19	Dec 20	12	1
Final Materiel Release (FMR)	Dec 21	Dec 21	0	2
Final Operational Capability (FOC)	Jun 23	Jun 23	0	2

Notes	
1	IMR was initially deferred by five months to enable the conduct of an additional vehicle reliability demonstration activity (four months) and the extension of Introduction into Service Training and the associated increase in vehicle deliveries (one month). <b>IMR has been delayed by a further 12 months to May 2020, due to the Hawkei reliability issues, design maturity and production delays caused by Steyr Motors entering voluntary administration. IOC will be delayed by 12 months due to the Hawkei reliability issues, design maturity and production delays caused by Steyr Motors entering voluntary administration.</b>
2	Thales has advised the Commonwealth that production can be increased to achieve FMR and FOC in accordance with the approved contract schedule.



## Section 4 – Materiel Capability Delivery Performance

### 4.1 Measures of Materiel Capability Delivery Performance

Pie Chart: Percentage Breakdown of Materiel Capability Delivery Performance	
 <p>A pie chart showing the percentage breakdown of Materiel Capability Delivery Performance. The chart is divided into two segments: a large green segment representing 86% and a smaller orange segment representing 14%. The green segment is labeled '86%' at the bottom.</p>	<p><b>Green:</b> The project expects to meet the materiel capability requirements as expressed in the Materiel Acquisition Agreement and in accordance with the requirements of the Technical Regulatory Authorities.</p> <p><b>Amber:</b> The Initial Materiel Release milestone will be delayed by 12 months to May 2020. This is due to the ongoing Hawkei reliability issues, design maturity, and production delays caused by the Steyr Motors voluntary administration. The above issues have also put two subsequent Material Release milestones at high risk.</p> <p><b>Red:</b> N/A</p>
<p><b>Note</b> This Pie Chart represents Defence's expected capability delivery. Capability assessments and forecast dates are excluded from the scope of the review.</p>	

### 4.2 Constitution of Initial Materiel Release and Final Materiel Release

Item	Explanation	Achievement
Initial Materiel Release (IMR)	<p>IMR is a future dated milestone projected for May 2020.</p> <p>By IMR, the following will be delivered:</p> <ul style="list-style-type: none"> <li>• 108 PMV-L and 108 Trailers to be delivered in accordance with the Force Generation Cycle;</li> <li>• 22 PMV-L and 22 Trailers for Introduction Into Service Training (increased from 14 PMV-L and 14 Trailers);</li> <li>• Eight PMV-L and eight Trailers for the conduct of Verification and Validation (V&amp;V), and PRAT; and</li> <li>• Logistics support arrangements, including Training, Supply and Maintenance Systems.</li> </ul>	Not yet achieved
Initial Operational Capability (IOC)	<p>IOC is a future dated milestone projected for December 2020.</p> <p>Declaration of IOC will be made by the Capability Manager following the conduct of a Battle Group sized Operational Test and Evaluation (OT&amp;E) activity to validate the Hawkei Fundamental Input to Capability components. The OT&amp;E assessment criteria is to be defined by the Capability Manager.</p>	Not yet achieved
Final Materiel Release (FMR)	<p>FMR is a future dated milestone projected for December 2021.</p> <p>By FMR, the following will be delivered:</p> <ul style="list-style-type: none"> <li>• 1100 PMV-L and 1058 Trailers; and</li> <li>• Introduction Into Service (IIS) Training and transfer of IIS training packages.</li> </ul>	Not yet achieved
Final Operational Capability (FOC)	<p>FOC is a future dated milestone projected for June 2023.</p> <p>Declaration of FOC will be made by the Capability Manager supported by the results of OT&amp;E and confirmation by the Delivery Group (CASG) that the Fundamental Input to Capability components have been delivered as agreed. The FOC criteria are to be defined by the Capability Manager.</p>	Not yet achieved

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## Section 5 – Major Risks and Issues

### 5.1 Major Project Risks

Identified Risks (risk identified by standard project risk management processes)	
Description	Remedial Action
There is a chance that the PMV-L will fail to successfully complete the Reliability <b>Growth</b> Program (RDT and PRAT), which will impact on schedule and performance. This could result from vehicle performance deficiencies or additional design modifications needing to be implemented into the developmental vehicle.	<ul style="list-style-type: none"> <li>RDT was completed in November 2018 with reliability issues outstanding. This caused a delay to commencing PRAT while residual failures were remediated. This is now disclosed as an Issue in Section 5.2. There remains a risk that PRAT will not be successfully completed. This risk is being treated through: <ul style="list-style-type: none"> <li>Close Commonwealth supervision and involvement during the conduct of the Reliability Growth Program.</li> <li>Commonwealth and Supplier senior leadership engagement to maintain oversight of critical reliability issues, responding to help needed, and resource requirements / prioritisation.</li> </ul> </li> </ul>
There is a chance that delays in the provision of technical and logistic support data will impact the development of the PMV-L training and support system. This could result in the vehicle being rolled-out to units without a fully developed support system.	<ul style="list-style-type: none"> <li>The inability to finalise the vehicle design, due to reliability issues, delayed the provision of technical and logistic support data required for the development of training materials. Maintenance courses therefore could not commence as planned. This is now disclosed as an issue in Section 5.2.</li> </ul>
There is a chance that the evolutionary nature of the PMV-L C4I system and the misalignment of Defence C4I programs will delay the system development.	<ul style="list-style-type: none"> <li>The ICS support system and maintenance documentation were not finalised in a timely manner, resulting in delay to ICS development. This is now disclosed as an issue in Section 5.2.</li> </ul>
There is a chance that production delays from vehicle reliability, quality issues, and component availability will impact on the achievement of the Initial Materiel Release and Initial Operating Capability milestones.	<ul style="list-style-type: none"> <li>Lower than expected production rate due to component availability and outstanding reliability issues has resulted in 12 months delay to IMR and IOC. This is now disclosed as an issue in Section 5.2. There remains a risk that further issues will cause further delays to IMR and IOC. This risk is being treated through: <ul style="list-style-type: none"> <li>Commonwealth and supplier senior leadership engagement to maintain oversight of critical reliability and quality issues, responding to help needed, and resource requirements / prioritisation.</li> <li>Embed Commonwealth production and quality assurance representatives at the production line.</li> <li>Close engagement between the Project Office and Capability Manager to ensure the milestone requirements and capability delivery priorities are aligned.</li> </ul> </li> </ul>
Emergent Risks (risk not previously identified but has emerged during 2018-19)	
Description	Remedial Action
There is a chance that the Hawkei Full-Rate Production baseline will not fully meet the user's expectations, due to scope, budget and vehicle design constraints. This will impact on cost, schedule and reputation.	<ul style="list-style-type: none"> <li>Conduct design traceability activities, in conjunction with the Capability Manager to validate scope and manage user expectations.</li> <li>Continual assessment of design maturity and scope compliance with the Prime Contractor.</li> </ul>
There is a chance that the LAND 121 Phase 4 Program may be discontinued impacting on cost, schedule, performance and reputation. This will result in the PMV-L capability not being acquired.	<ul style="list-style-type: none"> <li>Continuous engagement with Thales through Strategic Relationship Board on vehicle reliability remediation and Steyr Motors voluntary administration.</li> <li>Thales's progress towards remediating reliability failures increases confidence that the project will be successful and the capability acquired as planned.</li> </ul>

### 5.2 Major Project Issues

Description	Remedial Action
Reliability Program development was not completed on time, resulting in delay to entering PRAT.	<ul style="list-style-type: none"> <li>Re-benchmark key milestones and reset program schedule in consultation with the Capability Manager.</li> <li>Monitor Thales' progress through Strategic Relationship Board meetings and seek early intervention to remediate delays.</li> </ul>
The delays in the provision of technical and logistic support data, due to design maturity and reliability issues, has impacted the development of the PMV-L through-life-support package.	<ul style="list-style-type: none"> <li>Close Commonwealth oversight and support for the development and provision of the associated through life support contract deliverables.</li> <li>Implement interim support arrangements in consultation with the Capability Manager to ensure the Hawkei is sustained during the early stages of rollout.</li> </ul>

ICS development has been delayed due to the ICS support system and maintenance documentation not being completed to schedule.	<ul style="list-style-type: none"> <li>Alignment of ICS development with C4I and ILS development. Working groups hold regular meetings to manage the issue.</li> </ul>
The vehicle reliability issues and component delays have impacted the project schedule and delayed the achievement of IOC, by 12 months from December 2019 to December 2020.	<ul style="list-style-type: none"> <li>Close engagement between the Project Office, Prime Contractor and Capability Manager to ensure the milestone requirements and capability delivery priorities are aligned.</li> <li>Defence and the Prime Contractor are working collaboratively to resolve these issues.</li> </ul>
The Introduction Into Service of the Hawkei has been affected by the Introduction Into Service of other LAND 121 vehicles, impacting on schedule and reputation.	<ul style="list-style-type: none"> <li>Dedicated assessment of the LAND 121 training program to ascertain the way ahead.</li> <li>Additional funding and personnel allocated to Introduction Into Service tasks.</li> </ul>
Some capability requirements have not been met by Thales' current design at this stage of the design process.	<ul style="list-style-type: none"> <li>Requirements will need to be considered against suitable balance of capability need and feasible engineering options.</li> <li>Issues are openly discussed at Project Management Stakeholder Group meetings to seek the Capability Manager's direction as the project customer.</li> <li>Thales continues to progress design maturity to meet required specifications.</li> </ul>
Note	
Major risks and issues in Section 5 are excluded from the scope of the review.	

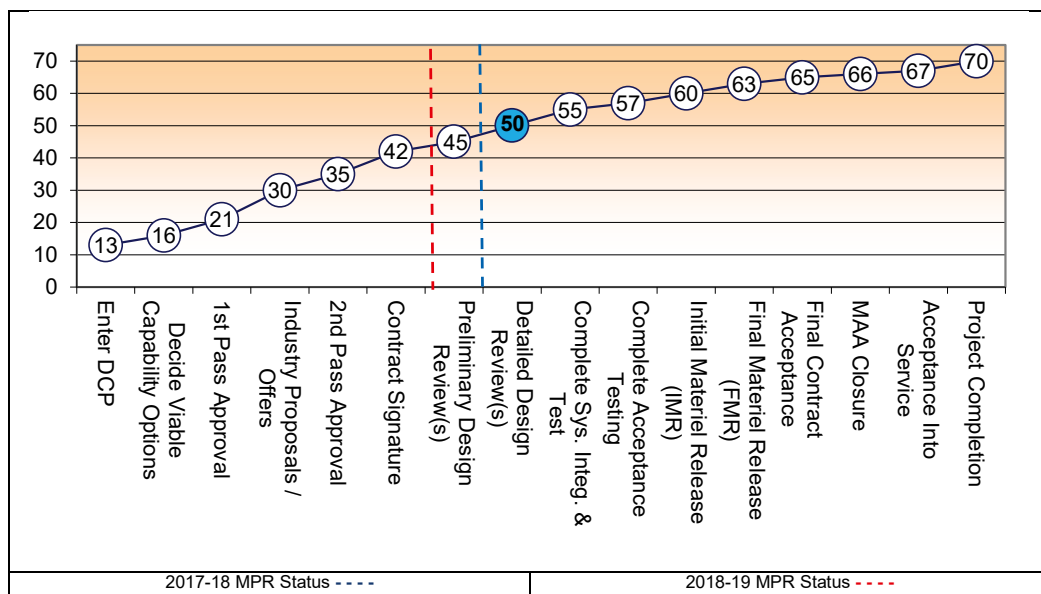
## Section 6 – Project Maturity

### 6.1 Project Maturity Score and Benchmark

Maturity Score		Attributes							Total
		Schedule	Cost	Requirement	Technical Understanding	Technical Difficulty	Commercial	Operations and Support	
Project Stage	Benchmark	7	7	7	8	7	7	7	50
Detailed Design Review	Project Status	6	7	6	7	6	6	6	44
	Explanation	<ul style="list-style-type: none"> <li><b>Schedule:</b> Hawkei reliability issues, design maturity and production delays have impacted the project schedule by 12 months. Thales has advised the Commonwealth that production can be increased to achieve FMR and FOC in accordance with the approved contract schedule.</li> <li><b>Requirement:</b> The baseline design of the developmental capability is yet to be finalised and endorsed by the Capability Manager.</li> <li><b>Technical Understanding:</b> The baseline design of the development capability is yet to be finalised, and verification &amp; validation activities are still ongoing before full rate production of the vehicle commences.</li> <li><b>Technical Difficulty:</b> Vehicle design and validation will not be finalised until the completion of PRAT.</li> <li><b>Commercial:</b> Maintaining the contract against the ongoing reliability issues and production delays has been commercially challenging.</li> <li><b>Operations and Support:</b> Completion of the baseline design will enable the Support System to be finalised. Detailed materiel and support requirements have been specified to a level necessary for procurement. The user trial in Iraq and Afghanistan informed the project of the support requirements for deployed vehicles.</li> </ul>							

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Section 7 – Lessons Learned

7.1 Key Lessons Learned

Description	Categories of Systemic Lessons
<p><b>Developmental Capability.</b> The PMV-L is a technically complex development project that requires active engagement with the contractor, multiple interagency stakeholders and projects from other domains.</p> <p><b>Maintaining close collaboration and communication</b> with all stakeholders is critical for understanding the technical requirements for a first-of-type capability, and facilitating proactive risk management and contingency planning.</p>	First of Type Equipment
<p><b>Adequate Resourcing.</b> First-of-type projects contain significant levels of complexity and require substantial effort to fulfil the right balance of technical, performance, risk, cost and schedule requirements. Appropriate investment is required by projects and the contractor from the outset to ensure such requirements are not over-optimistically represented or underestimated.</p> <p>Projects operating in a developmental environment are to pay greater attention to workforce management and project governance. The project is also to frequently assess contractor resources, capabilities and capacity in the lead up and during project delivery.</p>	Governance Contract Management First of Type Equipment
<p><b>Support from External Subject Matter Experts.</b> A number of external subject matter experts with vast Defence and commercial experience were engaged <b>during Tender Evaluations and Negotiations, and the Acquisition Phase</b>, for advice and to provide independent assessments of technical, commercial and financial matters.</p> <p>Active participation of external <b>advisors during Tender Evaluations and Negotiations, and the Acquisition Phase</b>, considerably improved the project's understanding and approach towards commercial, industry and programmatic issues.</p>	First of Type Equipment
<p><b>Integrated ICS Team.</b> The uncertainty in developing the ICS concept would have benefited from having an integrated and centralised team consisting of:</p> <ul style="list-style-type: none"> <li>PMV-L project staff;</li> <li>staff from other interrelated communication projects;</li> <li>Capability Manager specialists;</li> <li>external subject matter experts/contractors; and</li> <li>specialist staff such as engineers.</li> </ul>	Resourcing Contract Management
<p><b>Vehicle Acceptance Resourcing and Planning.</b> The early planning and generation of dedicated Commonwealth Production Liaison and Vehicle Acceptance staff (and processes) enables improved planning in conjunction with the OEM for Vehicle Acceptance and QA processes. This improves transition from design into the production and vehicle acceptance stage of the program.</p>	Contract Management Governance Resourcing

## Section 8 – Project Line Management

### 8.1 Project Line Management as at 30 June 2019

Position	Name
Division Head	MAJGEN Andrew Bottrell
Branch Head	Ms Sarah Myers
Project Director	COL John-Paul Ouvrier